STATEWIDE STRATEGIC TRANSPORTATION PLAN PROGRESS REPORT FEBRUARY 2012

Georgia Department of Transportation
Planning Division

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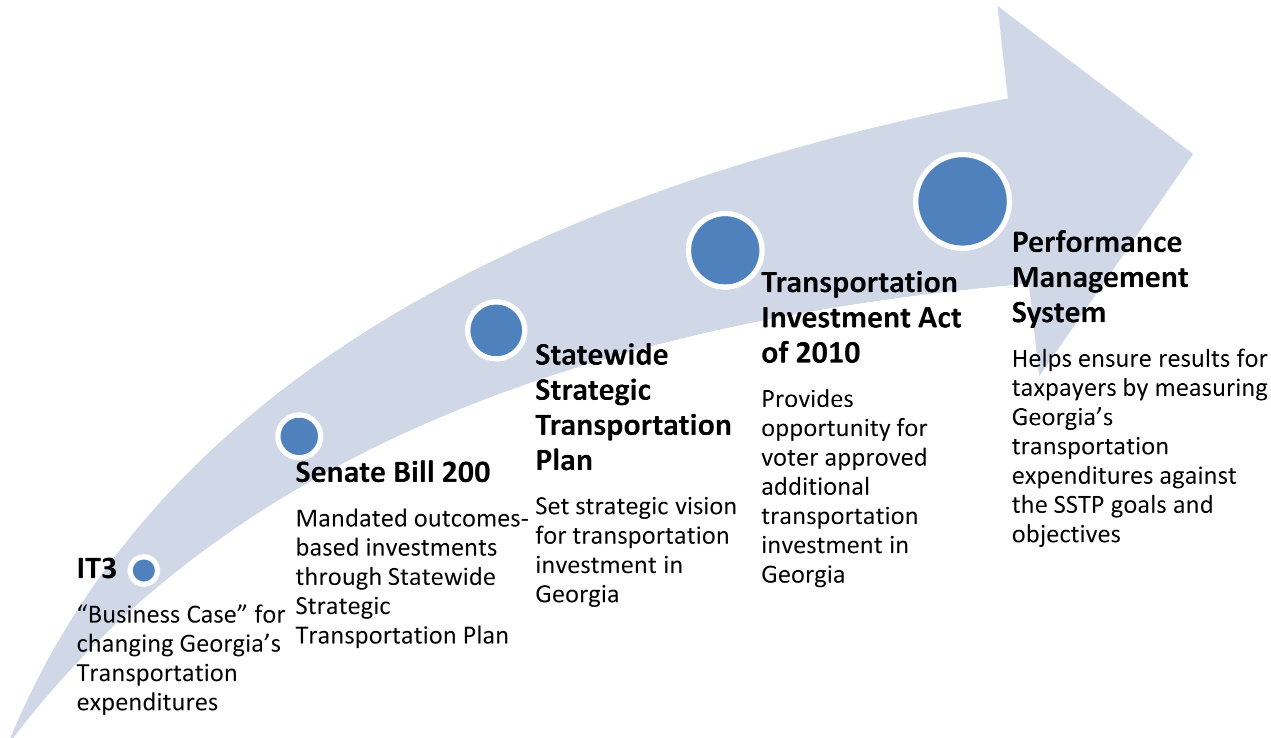
Introduction



The planning, financing, and execution of Georgia's transportation tax dollars have evolved significantly over the past four years, with an increased focus on accountability, transparency, and return on investment. In 2008, Investing in Tomorrow's Transportation Today (IT3) built the foundation of the first ever business case for a new direction in investment in the state's transportation system. In 2009, Senate Bill 200 created a new transportation governance structure in the state. In 2010, the Statewide Strategic Transportation Plan (SSTP) set the strategic direction for transportation investment, and The Transportation Investment Act of 2010 made possible increased transportation investment through an optional voter-approved regional transportation sales tax.

Georgia is now in the execution phase of this evolution, and a Transportation Performance Management System will help ensure that transportation investments in Georgia are strategically allocated, executed on time and on budget, and deliver results—reduced congestion costs, increased access to jobs, more reliable trips, and improved efficiency of freight and logistics. This report—the SSTP Progress Report—required by state law[1], plays a key role in this system by monitoring implementation of the SSTP and performance of the transportation system throughout the state. The SSTP Progress Report covers:

1. Performance of Georgia's current transportation system. The report updates the SSTP's transportation system performance measures based on the most current data available. This will provide the ultimate determination of whether the state is on the right track toward achieving its transportation goals.

2. Plans for Georgia's future transportation network. Future performance is a function of the size and quality of investment made in the system. More and better projects will result in higher performance. The SSTP outlines a strategic mix of investments that will deliver the best outcomes for taxpayer dollars. This report evaluates the allocation of planned, future transportation funds using these investment guidelines,

[1] O.C.G.A. § 32-2-41.1

ensuring that transportation plans throughout the state support the goals and objectives of the SSTP.

3. Execution of Georgia's transportation plans. Project delivery is critical to capturing the benefits envisioned in the SSTP, and this report monitors the on-time and on-budget performance of investments.

Structure of this Report

The current report represents a first step in implementing Georgia's Transportation Performance Management System. It primarily focuses on Metro Atlanta but includes highlights from fiscal year 2010 statewide. This report does not yet include information on the execution of projects in Metro Atlanta, but it does identify projects let to construction around the state that address the goals identified in the SSTP. Its scope and content will be gradually expanded in future editions.

Plans for Future Reports

This report only gives a snapshot of how we are doing statewide in our efforts to make sure our investments align with the goals and objectives of the SSTP. The next report will expand the scope to include all projects throughout the state. Subsequent versions will track project execution as the data become available. Eventually, this report will compare funding allocations and system performance throughout the state against targets to be established by the SSTP.

Performance of Georgia’s Current Transportation Network

Through combining best practices, developing an understanding of customer needs, and the completion of stakeholder interviews, the state adopted four transportation goals as part of the SSTP, which are supported by ten more specific, measurable performance objectives. Progress toward achieving these objectives will be tracked using a series of performance measures. Table 2 contains the current performance dashboard, listing the SSTP objectives and corresponding performance measures, including the current value of each measure. (Details on the data and methodology used to determine these values are contained in Appendix A.)

The performance dashboard shows the status of each measure with respect to the targets (if available). The meaning conveyed by the dials is summarized in Table 1. If the system is performing at or better than the associated target level, then the dial is in the green zone. If the system is performing below, but relatively close to, the target level (e.g., within 10%), it is in the yellow zone, and anything worse is in the red zone. (Details on the targets are contained in Appendix A.)

The dials also show the change in status since the last reporting period. This is also depicted in Table 1, where the value from the previous reporting period is indicated by a semitransparent needle, and the current value is a solid needle. If there has been no change in the measure, then just the solid needle is visible.

Table 1 Meaning of the performance dashboard dials

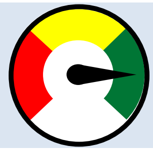
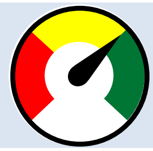
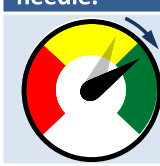
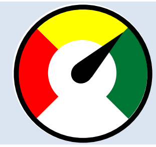
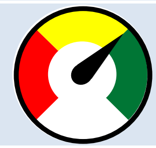
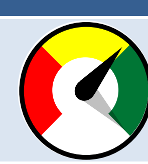
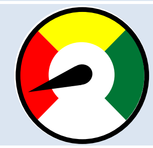
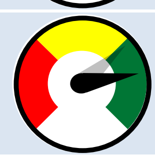
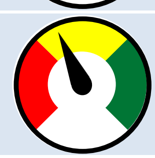
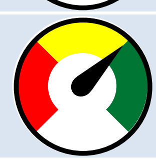
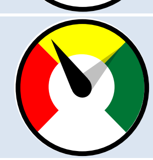
Status	Meaning
	Performing above/better than the target level.
	Meeting the target.
	Performing close to but below the target level.
	Considerable improvement needed to meet the target.
Change in status since last reporting period. The previous value is indicated by a semitransparent needle.	
	Needle moves to the right: Improving conditions.
	Needle moves to the left: Worsening conditions.
	Needle stationary: Conditions holding steady.

Table 2 Performance dashboard

Strategic Objective/ Performance Measure	Area	Previous Reporting Period	Current Reporting Period	Target	Desired Trend	Status
Improved Access To Jobs, Encouraging Growth In Private-Sector Employment, Work Force						
Average number of workers that can reach a major employment center by car in 45 minutes in the AM peak period	Metro Atlanta	N/A	2010 800,000 Workers	≥ 800,000 Workers*	Higher is better	
Average number of workers that can reach a major employment center by transit in 45 minutes in the AM peak period	Metro Atlanta	N/A	2010 120,000 Workers	≥ 120,000 Workers*	Higher is better	
Reduction In Traffic Congestion Costs						
Annual congestion cost per peak auto commuter	Metro Atlanta	2009 $1,046	2010 $924	≤ $1,046 (2009$)*	Lower is better	
Improved Efficiency, Reliability Of Commutes In Major Metropolitan Areas						
Average work commute time	Metro Atlanta	2009 30.1 Minutes	2010 30.3 Minutes	≤ 30.1 Minutes*	Lower is better	
Daily average number of people traveling in HOT lanes during the weekday AM and PM peak periods	Metro Atlanta	N/A	Oct-Dec 2011 17,200 Trips	Target Not Yet Established	Higher is better	Target Not Yet Established
Daily average number of people taking rail trips during the weekday AM and PM peak periods	Metro Atlanta	FY 2010 106,000 Trips	FY 2011 102,000 Trips	Target Not Yet Established	Higher is better	Target Not Yet Established
Efficiency And Reliability Of Freight, Cargo, And Goods Movement						
Daily hours of truck delay on Georgia Interstates	Statewide	N/A	2010 7,600 Hours	Target Not Yet Established	Lower is better	Target Not Yet Established
Border To Border And Interregional Connectivity						
Percent of population within 10 miles of a 4-lane state or US route	Statewide	N/A	2010 98%	≥ 95%*	Higher is better	
Support For Local Connectivity To Statewide Transportation Network						
Percent of state and federal transportation funds spent on local roads	Statewide	FY 2010 33%	FY 2011 19.6%	≥ 20%*	Maintain Level	

Strategic Objective/ Performance Measure	Area	Previous Reporting Period	Current Reporting Period	Target	Desired Trend	Status
Reduction In Crashes Resulting In Injury And Loss Of Life						
[Reduction in annual highway fatalities]()	Statewide	**2008-2009** 209 fewer fatalities	**2009-2010** 49 fewer fatalities	≥ 41 fewer fatalities from year to year†	Higher is better	
Optimized Capital Asset Management						
Percentage of Interstates meeting maintenance standards	Statewide	**2010** 72%	**2011** 76%	≥ 90%†	Higher is better	
Percentage of state-owned non-Interstate roads meeting maintenance standards	Statewide	**2010** 73%	**2011** 73%	≥ 90%†	Higher is better	
Percent of state-owned bridges meeting GDOT standards	Statewide	**2010** 87%	**2011** 87%	≥ 85%†	Higher is better	
Optimized Throughput Of People And Goods Through Network Assets Throughout The Day						
Metro Atlanta highway morning peak hour speeds	Metro Atlanta	**2010** 37.5 MPH	**2011** 42.7 MPH	≥ 40 MPH†	Higher is better	
Metro Atlanta highway evening peak hour speeds	Metro Atlanta	**2010** 40.4 MPH	**2011** 43.9 MPH	≥ 40 MPH†	Higher is better	
Average HERO response time	Metro Atlanta	N/A	**Jul-Dec 2011** 14 Minutes	≤ 10 Minutes†	Lower is better	
Percent of commute trips to major employment centers on transit	Atlanta Urbanized Area	N/A	**2010** 11.3%	≥ 11.3%*	Higher is better	
Average transit operating cost per passenger	Metro Atlanta	**FY 2009** $2.66 per Passenger	**FY 2010** $2.89 per Passenger	≤ $2.66 per Passenger (2009$)*	Lower is better	

* These are preliminary targets suggested by staff and are subject to change. For example, in 2012, ARC plans to develop performance measures for Metro Atlanta as part of its PLAN 2040 Implementation Program, possibly including performance targets that may differ from these.

† Target established by GDOT.

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Plans for Georgia's Future Transportation Network

The SSTP outlines, at a very high level, what it will take in terms of resources, investments, and policies to achieve the state's transportation goals and keep Georgia economically competitive. Key to this is a strategic mix of investments that will transform Georgia's transportation system, delivering the best outcomes for the cost. The SSTP focuses on investments across three broad categories: People mobility in Metro Atlanta; people mobility in the rest of the state; and statewide freight and logistics. However, since this first report is primarily focused on the Atlanta Regional Transportation Plan, most of the information provided addresses people mobility in Metro Atlanta.[2]

Outside of Metro Atlanta, the SSTP recognizes that the transportation needs are very different for the small and medium-sized cities and rural areas of the state. While the major issue in Metro Atlanta is congestion reduction, elsewhere in the state, maintaining and improving access to jobs is critical. In fiscal year (FY) 2010, in recognition of the need to maintain and improve access to jobs in the more rural areas of the state, 56% of the funding was utilized on roadway resurfacing, concrete pavement rehabilitation, and bridge replacements. Nearly 21% of the FY 2010 funding was spent on capacity-adding projects, including two major projects on the Governor's Road Improvement Program (GRIP) system, State Route (SR) 24 in Washington County and US 27 in Early County. Additionally, three interchange projects were let to construction in Camden, McDuffie, and Tift counties.

Safety improvements were also let to construction in FY 2010 throughout the state, with about 4% of funds going to intersection improvements, pavement markings, cable barrier installation, and improved signals and signage projects, among others. Further, pedestrian amenities and improvements are a major concern for all communities. As such, approximately 3% of funds went to sidewalk improvements and streetscape projects.

In Metro Atlanta, the SSTP recommends that the state focus its investment dollars on three performance areas:

- Improving the number of people who can reach a major employment center within 45 minutes;
- Increasing the number of people taking "reliable" trips per day; and
- Reducing the financial burden that congestion imposes on families through wasted hours and fuel (i.e., "congestion costs").

To help achieve these objectives, the SSTP sets the following investment guidelines for existing funds in Metro Atlanta:

- Weight funds toward managed toll/high occupancy toll (HOT) lanes on Interstate vs. arterial roads to increase the number of people taking reliable trips.
- Weight funds for new arterial capacity toward employment center mobility/connectivity to improve accessibility to, from, and between regional centers.
- Focus local-improvement funds and pedestrian-infrastructure investment on existing employment centers that have mixed-use zoning, transit, and clear plans to attract residential development to improve mobility within the centers.

The SSTP's priorities for new sources of funds (if flexible) are:

- First priority: Ensure that the core transit system can operate at levels that maintain Atlanta's competitiveness with peer cities.
- Second priority: Expand bus rapid transit (BRT) to major employment centers.

[2] Although not explicitly addressed herein, ARC's PLAN 2040 also contains projects that support freight and logistics, as shown in Figure 6 below. Future installments of this report will be expanded to include evaluations of people mobility in the rest of the state and statewide freight and logistics.

- Third priority: Augment the BRT network with new short-haul transit services (circulators) and BRT stations.
- Fourth priority: Augment the BRT network and premium circulators with other long-haul rail transit that connects suburbs to the core.

Although there are currently no new sources of transportation funds available in Metro Atlanta, on October 13, 2011, the Atlanta Regional Transportation Roundtable, made up of locally elected officials from the 10-county Metro Atlanta area, adopted a $7.1 billion[3] list of projects to be funded through a proposed ten year, one-percent regional sales tax per the Transportation Investment Act of 2010. The referendum on the sales tax is scheduled for July 2012.

This section of the report analyzes Atlanta's long-range Regional Transportation Plan (RTP) and short-range Transportation Improvement Program (TIP) in light of the investment guidelines listed above. It also analyzes Atlanta's final project list under the Transportation Investment Act of 2010. The results of these analyses are consistent with the findings of the SSTP: With the limitation of current revenue streams, Metro Atlanta resources are largely available for the top priorities of maintaining and getting the most out of its existing transportation infrastructure. However, with the possibility of new funds, the region could begin to transform its transportation system, helping ensure Metro Atlanta's and the state's future economic competitiveness.

Allocation of Funds by Program Area

This section provides a high-level assessment of how PLAN 2040 and Metro Atlanta's TIA project list support the SSTP's investment guidelines and funding priorities.

PLAN 2040

Metro Atlanta's current RTP, PLAN 2040, contains over $61 billion in transportation investments through the year 2040 and was adopted by the Atlanta Regional Commission (ARC) in July 2011. ARC's process for developing PLAN 2040 explicitly considered the SSTP goals and objectives. Metro Atlanta's current TIP, drawn from PLAN 2040, details the region's transportation investments through fiscal year 2017.

The funding allocations by program area in PLAN 2040 are shown in Figure 1 on page 10 and are broken down into the TIP (FY 2012-2017) and long range (FY 2018-2040) elements of the plan in Figure 2 and Figure 3, respectively. Consistent with the findings of the SSTP, Figure 1 shows that with the limitation of current revenue streams, a majority ($43.4 billion) of Metro Atlanta's transportation resources go to projects that address the top priorities of maintaining and getting the most out of the existing infrastructure. The SSTP set three investment guidelines for the remaining funds:

1. Weight funds toward managed toll/high occupancy toll (HOT) lanes on Interstate vs. arterial roads to increase the number of people taking reliable trips. Overall, PLAN 2040 allocates 31% more funds to new general purpose roadway capacity projects ($7.0 billion) than managed lanes ($5.4 billion). However, in the near term, the FY 2012-2017 TIP directs 5.6% more funding to managed lanes ($2.1 billion) than new general purpose roadway capacity ($2.0 billion). The Georgia Department of Transportation (GDOT) has three major managed lane projects that are either open or soon to be under construction:

- The first section along I-85 in Gwinnett/DeKalb County was opened in October 2011. An extension to Hamilton Mill is funded in the FY 2012-2017 TIP.
- A project to add two reversible managed lanes in Henry County along I-75 is funded in FY 2013.
- The third project is along I-75 in Cobb/Cherokee County and is a reversible managed lane project. GDOT is developing a funding plan and hopes to have the project under construction in FY 13 or FY 14.

If implemented as planned, PLAN 2040 would create a network of over 300 lane miles of HOT lanes throughout the region—completing a substantial portion of the managed lane network envisioned in the SSTP. GDOT plans to work through its Managed Lane System Plan over the coming years as outlined in Plan 2040.

[3] Total includes $6.14 billion in proposed regional sales tax funds and $960 million in additional federal and local matching funds, all in 2011 year dollars. Total does not include an additional $1 billion that would be distributed to the local jurisdictions in the Atlanta district by formula for discretionary use on transportation projects.

2. *Weight funds for new arterial capacity toward employment center mobility/connectivity to improve accessibility to, from, and between regional centers.* Based on an evaluation of the proximity of the arterial capacity-adding projects to the largest employment centers in the region, PLAN 2040 does not closely follow this investment guideline: Of the $7.0 billion allocated to general purpose roadway capacity projects in the RTP, only 29% ($2.0 billion) goes to projects that are partially or completely within three miles of Atlanta's regional centers.[4] It is assumed that arterial capacity projects located close to the regional centers will help facilitate access to/from the centers, although projects located farther away may also improve accessibility.

3. Focus local-improvement funds and pedestrian-infrastructure investment on existing employment centers that have mixed-use zoning, transit, and clear plans to attract residential development to improve mobility within the centers. It is unclear whether PLAN 2040 is consistent with this investment guideline since 85% ($1.1 billion) of the $1.2 billion in bike/ped funding is in a "lump sum" form and not allocated to specific projects. It is not yet known where the projects to be built with these funds will be located, but ARC staff anticipates that they will be focused on the centers, consistent with the PLAN 2040 goals and objectives to focus infrastructure investments on centers and corridors and encourage multimodal options where land use patterns make such options feasible. Still, of the funds identified for specific bike/ped projects, 67% ($121 million) is planned for projects that are partially or entirely within three miles of the regional centers. The disposition of the lump sum projects will ultimately determine whether PLAN 2040 follows this guideline.

In addition to these general findings, PLAN 2040 contains many projects that support the investment guidelines recommended by the SSTP. Some illustrative examples are highlighted below:

- As previously mentioned, the SSTP encouraged the weighting of new arterial capacity toward employment centers. The Cobb Parkway (US 41) widening project in Cobb County is a great example of this type of project. This project widens Cobb Parkway from its present four through lanes configuration to a minimum of six lanes and up to eight lanes on a portion of the six mile stretch. Not only will the project reduce traffic congestion in one of the region's major employment centers, but it will further enhance the ability of the corridor to serve as an alternate route to I-75 which is adjacent to the US 41 corridor.
- The Buford Highway Pedestrian Improvement project provides a good example of the type of Bicycle and Pedestrian program project the region should support. The project is located within a major regional activity center and is one of the most heavily foot-traveled corridors in the region with significant bus transit ridership which connects conveniently to rail transit facilities located a short distance away. In addition to the high volume of pedestrians and transit riders, the corridor is primarily without sidewalks and has few points available for pedestrian crossings. This project will provide or repair sidewalks for more than 2 miles, while adding pedestrian level lighting for visibility, refuge islands at high pedestrian crossing areas and greatly improve safety for pedestrians in the corridor.

As new resources become available, the region could begin focusing additional funds toward the implementation of transit projects, consistent with the SSTP's recommendations to supply more reliable trips. Historically, the shortage of transit funds for the region, coupled with present and possibly future limitations pose significant barriers to transit capital and operations expansion in the region. However, with additional resources, the region could begin implementing the vision set forth in the SSTP which included new short-haul transit services (rubber-tired trolley or rail circulators) in the major employment centers, expanding BRT to the major employment centers, including BRT stations, and further augmenting this system with long-haul rail transit services connecting suburban areas with the urban core. Projects fitting these descriptions have been identified within Concept 3, the long range transit vision for the Atlanta region, and can be found in the PLAN 2040 Aspirations Plan. They may also be found in Atlanta's final project list developed under the Transportation Investment Act of 2010 (TIA), which is described next.

[4] The regional centers used for this analysis are defined in Appendix A.

Figure 1 Allocation of funds by program area in PLAN 2040 (FY 2012-2040 = $61 billion)

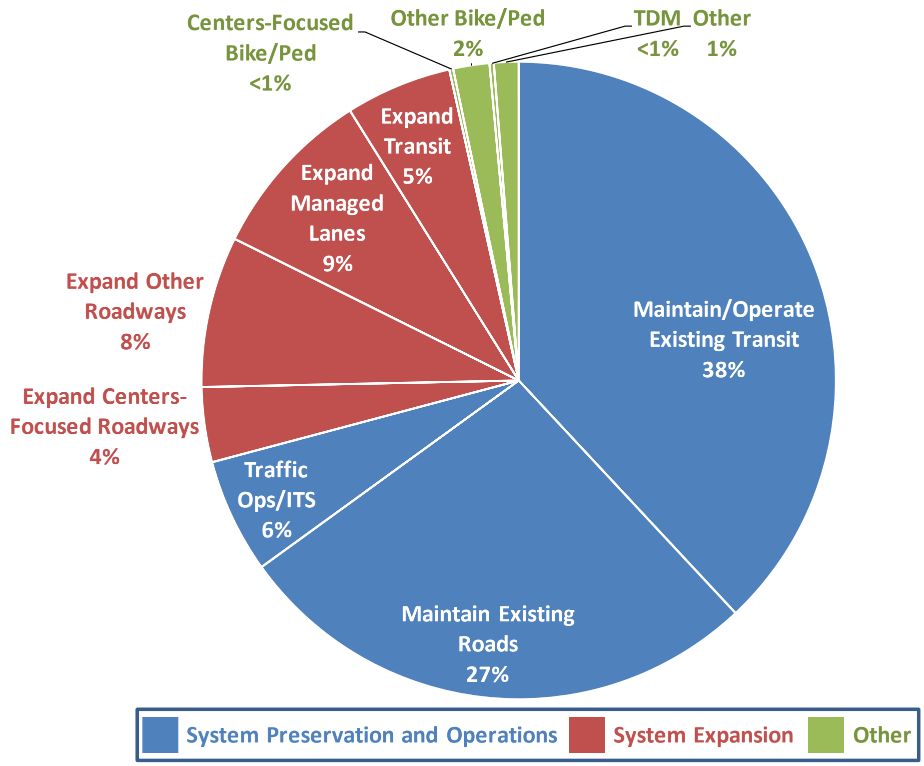


Figure 2 Allocation of funds by program area in the Atlanta TIP (FY 2012-2017 = $12 billion)

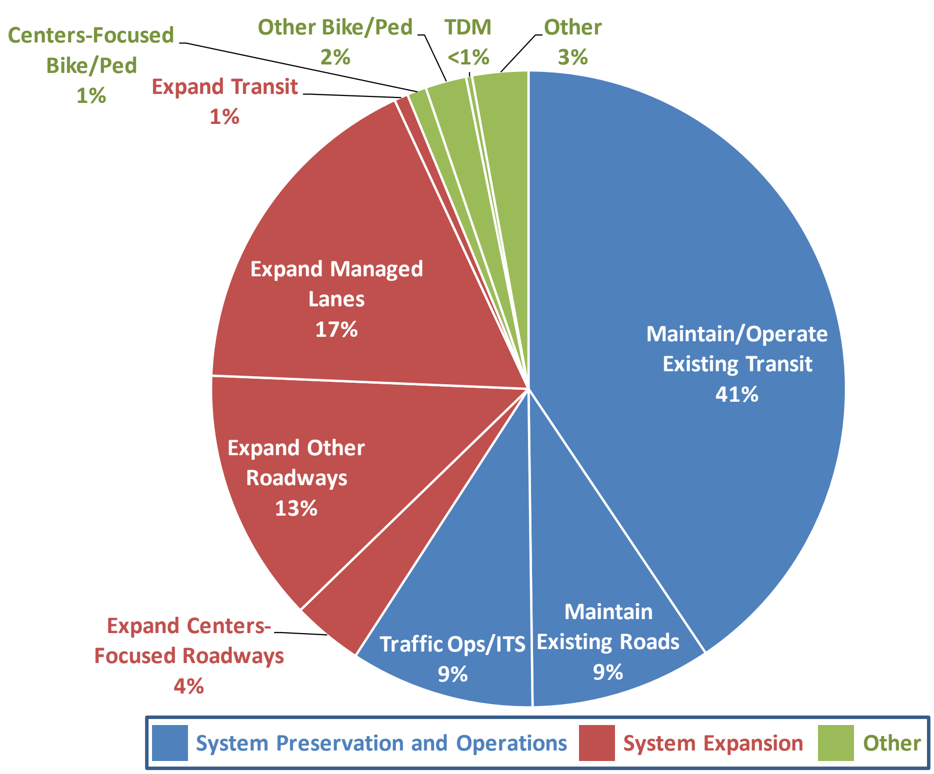
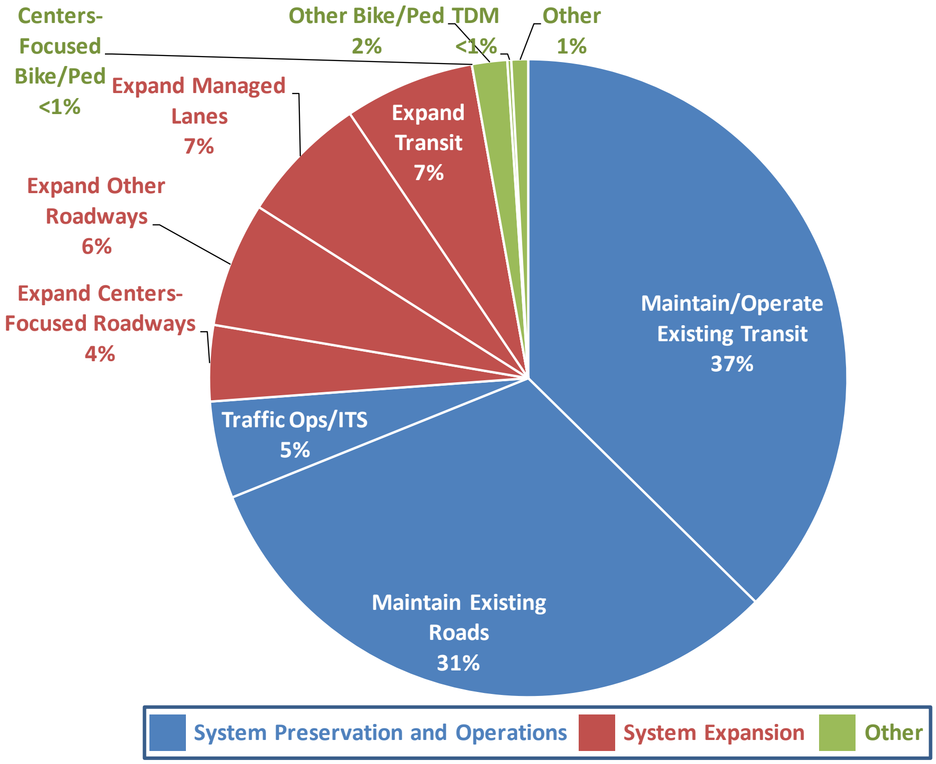


Figure 3 Allocation of funds by program area in the long-range portion of PLAN 2040 (FY 2018-2040 = $49 billion)

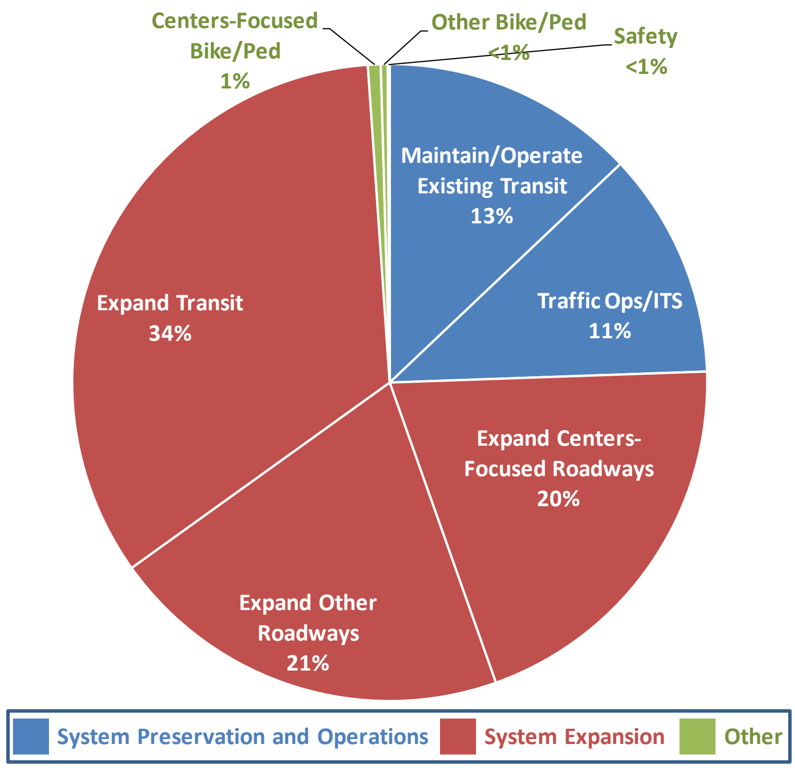


Metro Atlanta's TIA Project List

On October 13, 2011, the Atlanta Regional Transportation Roundtable, made up of locally elected officials from the 10-county Metro Atlanta area, adopted a $7.1 billion list of projects to be funded through a proposed ten year, one-percent regional sales tax per the Transportation Investment Act of 2010. At the beginning of the process, the Roundtable adopted a set of investment criteria to guide the development of the project list. The criteria were modeled to a large extent after the investment guidelines contained in the SSTP and were designed to help ensure that the final list would deliver strategic results for the region.

Figure 4 on page 12 shows the allocation of funds by program area in Metro Atlanta's final TIA project list and reinforces that because so much of the funding in PLAN 2040 is dedicated to maintaining and getting the most out of the existing infrastructure, new funding sources are needed to expand and transform the system. The proposed TIA funds would help address this need, as 73% ($5.2 billion) are allocated to system expansion.

Figure 4 Allocation of funds by program area in Metro Atlanta's final TIA project list ($7.1 billion)



The final list aligns well with two of the three SSTP investment guidelines:

Weight funds for new arterial capacity toward employment center mobility/connectivity to improve accessibility to, from, and between regional centers. Of the $2.8 billion allocated to general purpose roadway capacity projects in the final project list, 50% ($1.4 billion) goes to projects that are partially or completely within three miles of Atlanta's regional centers.

Focus local-improvement funds and pedestrian-infrastructure investment on existing employment centers that have mixed-use zoning, transit, and clear plans to attract residential development to improve mobility within the centers. Of the $70 million in bike/ped funding in the final project list, 65% ($46 million) is planned for projects that are partially or entirely within three miles of the regional centers.

In addition to the three investment guidelines for existing transportation funds in Atlanta, the SSTP set four priorities for new sources of funds:

Ensure that the core transit system can operate at levels that maintain Atlanta's competitiveness with peer cities. Roughly 13% ($850 million) of the proposed TIA funds is allocated to maintaining and operating existing transit in the region. This includes $669 million for MARTA state of good repair, $128 million in capital and operating assistance for *Xpress*, and $40 million in operating assistance for Gwinnett County Transit. In addition, there is $100 million to reinstate transit service in Clayton County.

Expand bus rapid transit (BRT) to major employment centers. Twenty-five percent ($1.8 billion) of the proposed TIA funds is allocated to new rail and/or BRT projects that will serve major regional employment centers, including $700 million for new rail service between MARTA Lindbergh Station and Emory University/Centers for Disease Control, $695 million for rail or BRT service between Acworth/Kennesaw/Town Center/Cumberland and MARTA Arts Center Station, and $225 million for rail or BRT service between downtown and DeKalb County along the I-20 East corridor. The list also includes a combined $132 million in project development funds (e.g., planning, right-of-way acquisition, engineering) for the I-85 North corridor and the MARTA North heavy rail line extension, both of which may lead to future transit service expansions serving regional employment centers.

Augment the BRT network with new short-haul transit services (circulators) and BRT stations. Roughly 9% ($602 million) of the proposed TIA funds is allocated to the Atlanta Beltline streetcar project, which will provide last-mile connectivity between the MARTA rail system and origins and destinations in midtown and downtown Atlanta (among other areas).

Augment the BRT network and premium circulators with other long-haul rail transit that connects suburbs to the core. Twenty million dollars in the TIA project list is allocated to project development activities for the Griffin to Atlanta commuter rail line, consistent with this SSTP priority for new funding sources.

Support for SSTP Objectives

This section provides a high-level assessment of how the projects in the State Transportation Improvement Program, PLAN 2040 and Metro Atlanta's TIA project list support the ten SSTP objectives listed in Table 3 below. (Details on the data and methodology used to make this assessment are contained in Appendix B.)

Table 3 SSTP goals and objectives

Goal	Objective
Supporting Georgia's economic growth and competitiveness	Improved access to jobs, encouraging growth in private-sector employment, work force
	Reduction in traffic congestion costs
	Improved efficiency, reliability of commutes in major Metropolitan areas
	Efficiency and reliability of freight, cargo, and goods movement
	Border to border and interregional connectivity
	Support for local connectivity to statewide transportation network
Ensuring safety and security	Reduction in crashes resulting in injury and loss of life
Maximizing the value of Georgia's assets, getting the most out of the existing network	Optimized capital asset management
	Optimized throughput of people and goods through network assets throughout the day
Minimize impact on the environment	Reduce emissions, improve air quality statewide, limit footprint

State Transportation Improvement Program

The FY 2012-2015 State Transportation Improvement Program (STIP) indentifies nearly $8.9 billion for transportation improvements around the state (including Metro Atlanta projects and local matching funds). These improvements include projects for widening, maintenance, traffic management and bridge replacements. The representative projects below highlight the state's efforts toward implementation of the SSTP's goals and objectives.

In support of Georgia's economic growth and competitiveness, the STIP includes funding for right-of-way acquisition in the SR 133 corridor in South Georgia. This corridor is a vital link between I-75 and the cities of Moultrie and Albany as well as providing the Marine

Corps Logistics Base, located in Albany, a direct link to the interstate. This corridor will provide a multi-lane roadway to this area of the state and improve connectivity for the military operations at the base.

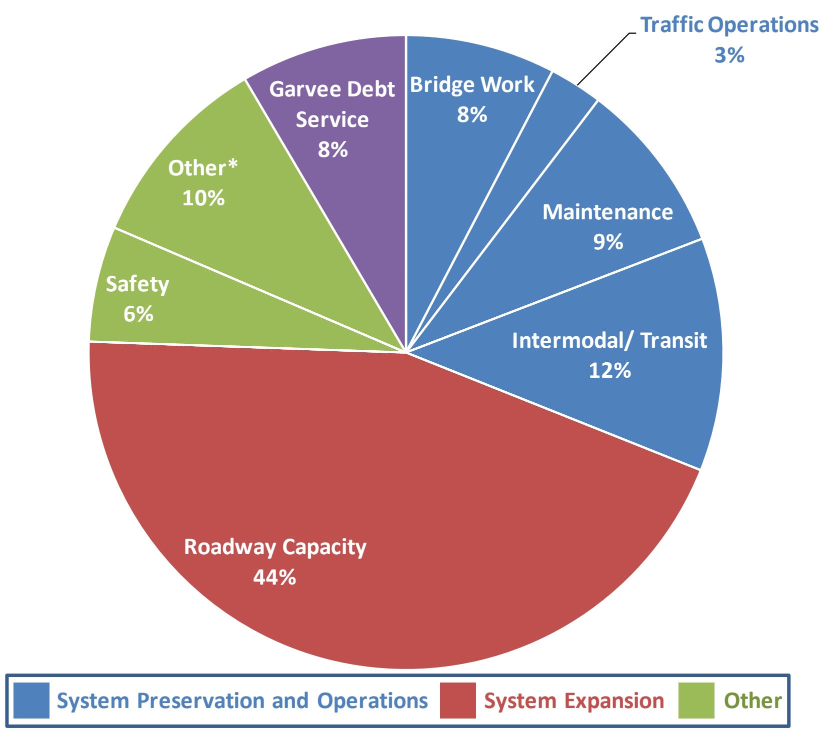
The STIP also funds construction of Veterans Parkway in Columbus, which will ease congestion in the area. The SR 96 corridor in Peach, Houston, and Twiggs Counties will improve east-west connectivity in the region and provide congestion relief for employees heading to and from Robins Air Force Base and Warner Robins. In Savannah, providing last-mile connectivity to the port is vital to the city, the region, and the state. The Jimmy DeLoach Parkway Extension has construction slated for FY 2012 and Grange Road has right-of-way acquisition included in FY 2013.

Providing a safe network for the traveling public is a primary goal. Two major cable barrier projects are included in the STIP for construction in FY 2012: I-20 from the Alabama line to SR 5 and SR 400 from the Forsyth County line to south of County Road 145. Numerous roundabout projects are also identified in the STIP.

Optimizing capital assets is a continuous process. Major projects identified in the STIP include resurfacing I-75 from Bartow County to Gordon County, resurfacing I-59 from the Alabama state line to SR 136, and a whole host of bridge rehabilitation/replacement projects.

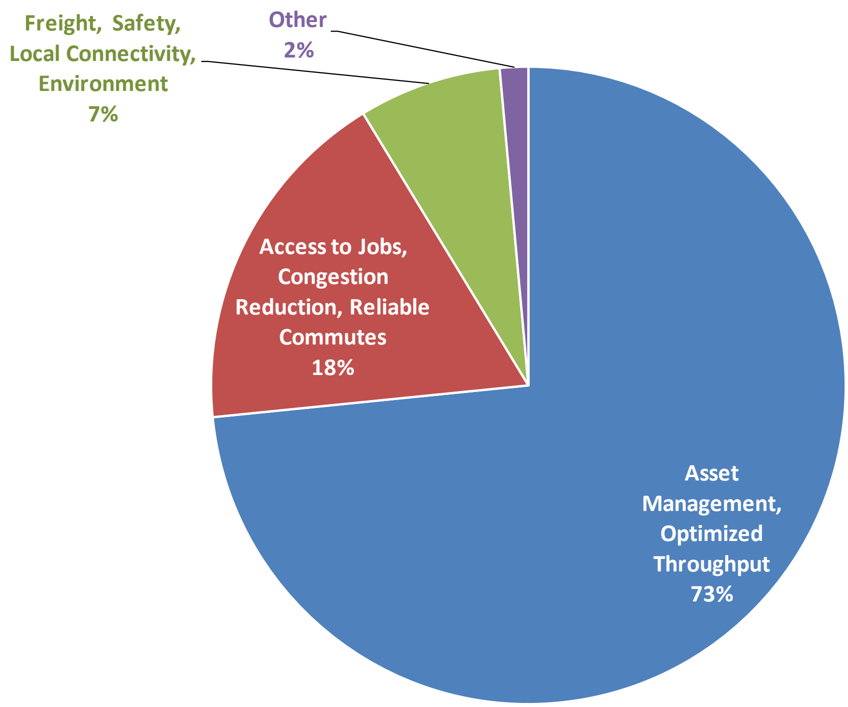
Figure 5 indicates that GDOT is investing a large share of the four-year STIP into operating the transportation system. Nearly one-third of all statewide funding in the STIP is to be utilized for taking care of Georgia's existing infrastructure. In fact, GDOT has embarked on an aggressive strategy to develop a state of the art asset management system. This includes a resurfacing program, implementation of the Governor's Strategic Highway Safety Plan, a bridge replacement/rehabilitation program, and other programs as needed.

Figure 5 Allocation of funds by program area in the FY 2012-2015 STIP



*A portion of the "Other" category in Figure 5 also contributes to capital asset management.

Figure 6 Share of PLAN 2040 funds supporting each SSTP objective.



PLAN 2040

Figure 6 shows the share of funds in PLAN 2040 that supports each of the nine[5] SSTP objectives. (For details on how this analysis was performed, see Appendix B.) Once again, consistent with the SSTP, this analysis confirms that with the limitation of current revenue streams, Metro Atlanta resources are largely available for the top priorities of maintaining and getting the most out of its existing transportation infrastructure.

The SSTP objectives of "Optimized capital asset management" (i.e., "Asset Management") and "Optimized throughput of people and goods through network assets throughout the day" (i.e., "Optimized Throughput") lead the nine objectives in terms of total PLAN 2040 funding support (73%). These two objectives are achieved through roadway and transit operations and maintenance projects, transit expansion projects, traffic operations/ITS projects, HOT lanes, and bike/ped projects. Collectively, these projects account for 71% of the PLAN 2040 funding as seen in Figure 1 on page 10. Specific examples of projects from PLAN 2040 that support this objective include: Resurfacing and maintenance lump sums, Courtland Street bridge replacement and upgrade over CSX and MARTA rail lines, the I-285 East to I-75 South ramp improvements project in Clayton County, GDOT ITS Operations & Support Program, and the Beltline Transit and Multi-Use Trail projects.

The "big three" SSTP objectives related to people mobility in Metro Atlanta—"Improved access to jobs, encouraging growth in private-sector employment, work force" (i.e., "Access to Jobs"), "Reduction in traffic congestion costs" (i.e., "Congestion"), and "Improved efficiency, reliability of commutes in major Metropolitan areas" (i.e., "Reliable Trips")—each receive comparable but significantly less support in PLAN 2040 than asset management and optimized throughput, and they are ranked third, fourth, and fifth, respectively, among the nine SSTP objectives.

Examples of projects from PLAN 2040 that improve access to jobs include: the Revive 285 Managed Lane

[5] "Border to border and interregional connectivity" does not apply at the regional level and therefore does not apply to PLAN 2040 or the TIA list.

project, the Peachtree Streetcar, and the Cobb Parkway Pedestrian Improvements project in the Cumberland regional center.

Examples of projects from PLAN 2040 that reduce congestion costs include: the I-285 West at I-20 West interchange reconstruction project; the SR 92 widening project in Paulding County; and the SR 20 bridge capacity project over the Chattahoochee River.

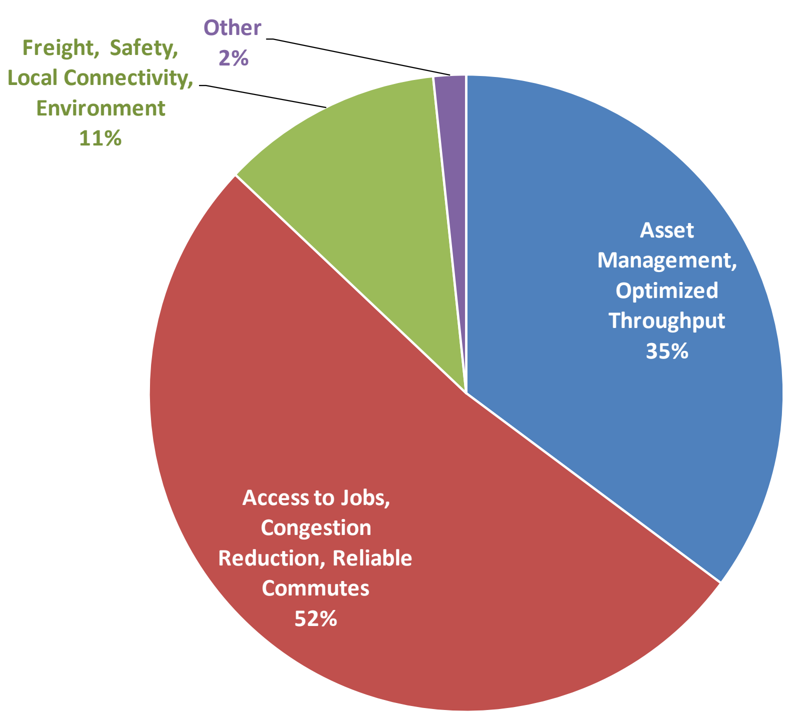
Examples of projects from PLAN 2040 that increase reliable trips include: ITS operations and support lump sums; HERO truck operations; and the various managed lane projects, such as on I-75, I-285, I-20, and SR 400.

The remaining four SSTP objectives—“Efficiency and reliability of freight, cargo, and goods movement” (i.e., “Freight”), “Reduction in crashes resulting in injury and loss of life” (i.e., “Safety”), “Reduce emissions, improve air quality statewide, limit footprint” (i.e., “Environment”), and “Support for local connectivity to statewide transportation network” (i.e., “Local Connectivity”)—receive much less funding in PLAN 2040 than the top five objectives. However, it should be noted that many projects can address multiple needs, and this high-level assessment does not necessarily capture all of the overlap in project need and purpose. Examples of projects from PLAN 2040 that support these objectives include: the widening of the SR 155 freight corridor in Henry County; the Valley Hill Road widening in Clayton County; the SR 92 realignment and underpass beneath US 78 and the Norfolk Southern rail line; and the numerous projects funded with Congestion Mitigation and Air Quality funds, such as the Transportation Demand Management Employer Services.

Metro Atlanta’s TIA Project List

Figure 7 shows the share of funds in Metro Atlanta’s TIA project list that supports each of the nine SSTP objectives. Since PLAN 2040 covers most of the operations and maintenance needs in the region, the TIA list is able to focus more resources on reducing congestion and improving access to jobs, as evident in the chart.

Figure 7 Share of funds in Metro Atlanta’s final TIA project list supporting each SSTP objective.



More than half of the TIA funds would go towards improving access to jobs, reducing congestion, and increasing reliable trips in the region. Examples of projects that would support these objectives are: Flat Shoals Road widening in Rockdale; I-285 North at SR 400 interchange improvements; SR 400 collector distributor lanes; Clifton Corridor transit, Perimeter Center ITS Program; and SR 400 at SR 140 interchange improvements.

Roughly one third of the TIA funds would support asset management and optimized throughput, including the Pryor Street at CSX rail line and MARTA East Line bridge replacement; Gwinnett County bus operating assistance; I-20 West ITS and Western Regional Traffic Control Center; and Fulton Industrial Boulevard intersection improvements.

The remaining TIA funds would go to improvements in freight, safety, environment, and local connectivity to the statewide network. Examples include: Thornton Road truck friendly lanes, ITS, intersection improvements and partial widening; the Tara Boulevard "super arterial"; South Cobb Drive corridor improvements; Campbellton Fairburn Road intersection improvements; and Lawrenceville Highway multi-use trail and pedestrian improvements in Gwinnett.

Conclusion

Consistent with the SSTP, this analysis confirms what is already known: With the limitation of current revenue streams, Metro Atlanta resources are largely available for the top priorities of maintaining and getting the most out of its existing transportation infrastructure. As a result, relatively little is left over to improve access to jobs, reduce traffic congestion costs, or increase the number of people taking reliable trips.

The SSTP found that without new sources of funding, per capita congestion costs will nearly double today's levels by 2030. Employment-center talent pools (i.e., the number of people who can reach an employment center in 45 minutes during the peak periods) will be 33% smaller than today, significantly eroding the value proposition to future employers and putting future job growth at risk. Considering its operating shortfall, the core rail-transit system (MARTA) will operate at 50-70 percent of current levels. In addition, *Xpress* bus service will also be cut or eliminated because there will not be operating funds to support it. The public acceptance of cutting transit and increasing congestion for Metro Atlanta will be particularly adverse when this story is contrasted with the aggressive investment its peers are making to mitigate congestion and create reliable trips through HOT-lane networks and new transit options.

However, the SSTP also found that if new funding sources are made available—like the proposed regional transportation sales tax enabled by the Transportation Investment Act of 2010—and by making the correct, strategic investment in Metro Atlanta's transportation system—like the TIA project list approved by the Atlanta Regional Transportation Roundtable on October 13, 2011—system performance could be dramatically improved, generating significant economic benefits and new jobs.

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Execution of the Plans

In the future, this report will be expanded to include detailed information on the execution (i.e., on-time/on-budget performance) of transportation investments throughout the state.

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Appendix A: Performance Measures—Data and Methodology

This section describes each performance measure in detail, including the data and methodology used to model or calculate it.

Average number of workers that can reach a major employment center by car in 45 minutes in the AM peak period

This measure applies to the 20-county Metro Atlanta region. It is limited to Atlanta because: (1) congestion in Atlanta is typically much more severe than in other areas of the state, significantly restricting the size of the talent pool that can access major employment centers in a reasonable amount of time (i.e., 45 minutes or less) during the peak travel periods, and (2) the data and tools for reliably estimating this measure in the rest of the state are currently unavailable. Figure A-1 depicts the 13 major employment centers in Atlanta used in this analysis.

This measure is based on a combination of modeled and observed data. It should be noted that ARC's model was modified for the purposes of developing this measure, and therefore the results do not necessarily reflect the official travel forecasts produced and endorsed by ARC. In brief, the Atlanta Regional Commission's (ARC) travel demand model is used to estimate the average time it takes to travel by car from any location in the 20-county region to each of the 13 major regional employment centers during the morning rush hours on a typical weekday. In addition, wherever possible, real-world speed data from GDOT's NaviGAtor system are used in place of the modeled speeds (Figure A-2 shows the freeway segments where NaviGAtor data are available). Using this travel time information, the "employment-shed" for each center is estimated—i.e., the surrounding area from which workers can reach the center in 45 minutes or less by car during the AM peak period (6:00-10:00AM). The number of workers living in each employment-shed is then estimated using spatially allocated socioeconomic data from ARC, and the average size (in terms of number of workers) of the 13 major employment-sheds is calculated and reported. The detailed methodology is described below.

Figure A-1 Metro Atlanta major employment centers

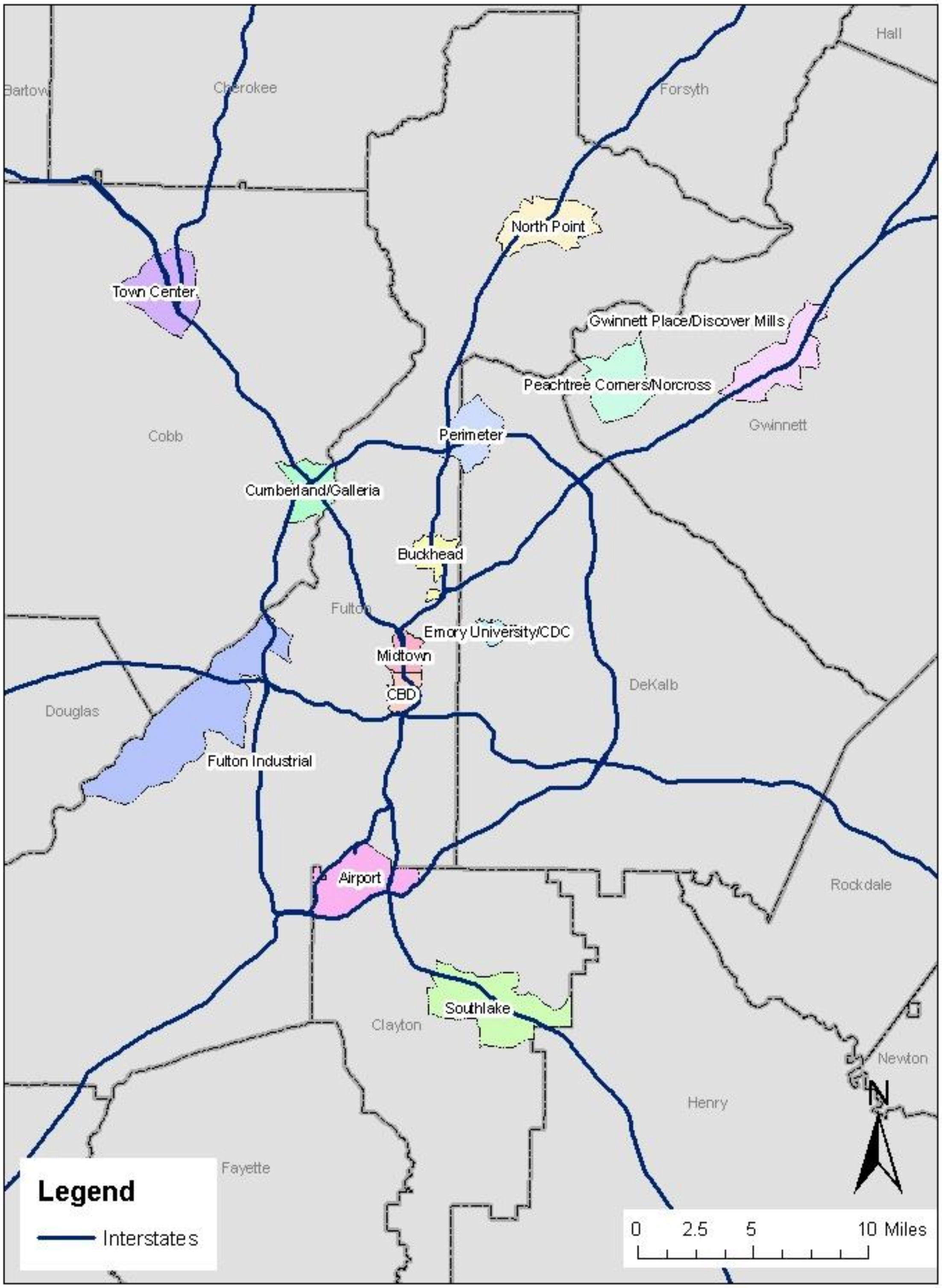
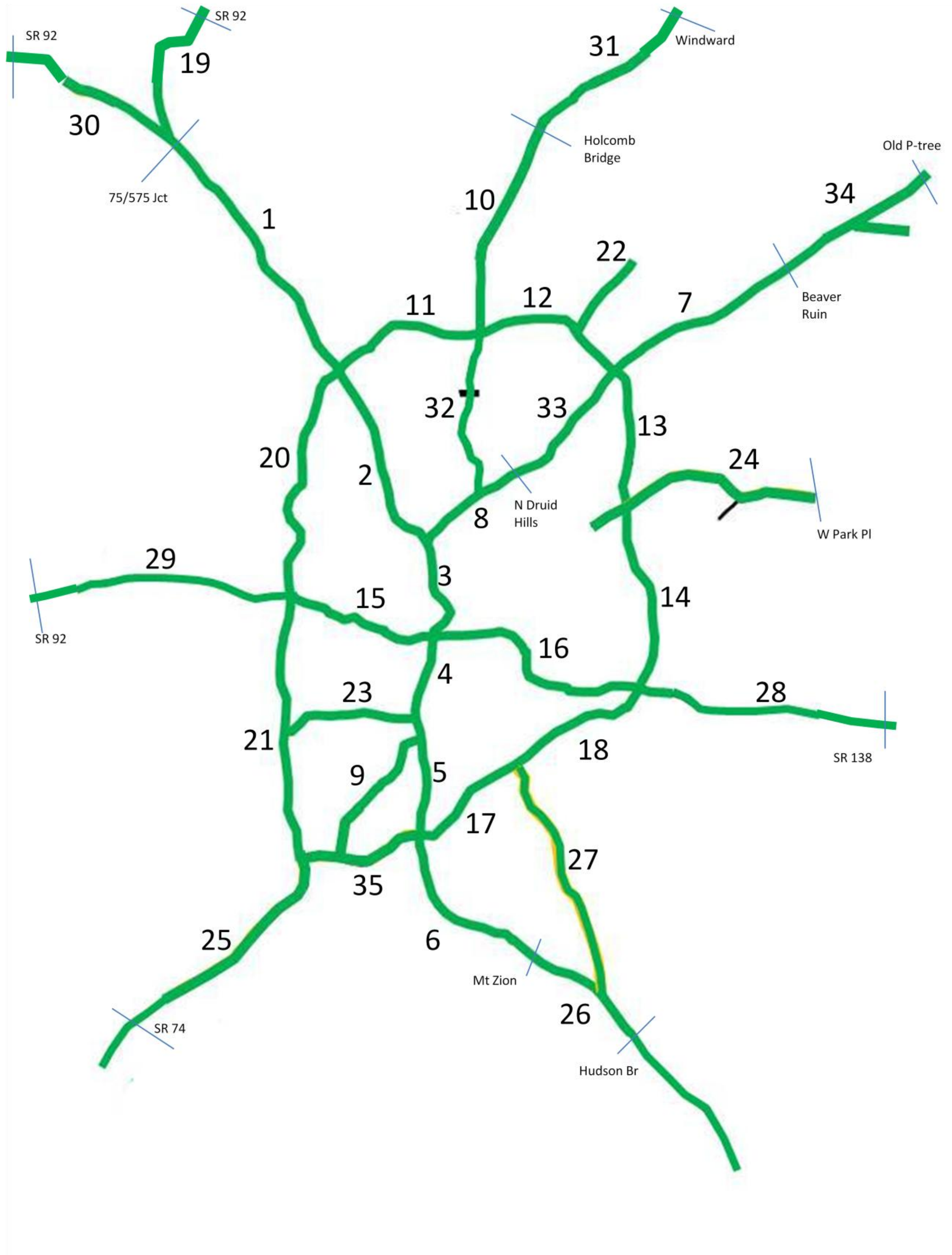


Figure A-2 NaviGAtor instrumented freeway segments in the Atlanta area



1. Run ARC's travel demand model. Travel times are based on model estimated speeds for all roadways in ARC's 20-county modeling domain except for those where by real-world NaviGAtor data are available. Therefore, ARC's model is run for the same year as the corresponding NaviGAtor data. For example, for the current report, the latest available NaviGAtor data are from 2010, and ARC's model was run using year 2010 inputs.

2. Extract real-world speed/travel time information from the latest available NaviGAtor data. NaviGAtor data are routinely analyzed for use in the annual Atlanta Transportation MAP Report. This information may also be used in place of modeled speeds/travel times for purposes of calculating this measure. Rather than using the average travel times/speeds from NaviGAtor, it was decided to use the 95th percentile travel times since this would provide a better measure of the number of workers that can reach the major employment centers within 45 minutes *reliably*. That is, workers must allow for up to the 95th percentile travel time in order to be sure to arrive at work on time 19 out of 20 times. (This is closely related to the so-called Buffer Time Index.) Therefore, the NaviGAtor data were processed to obtain the 95th percentile travel times for all NaviGAtor segments in 15-minute increments for all weekdays in 2010. Running hourly averages of the corresponding speeds were then calculated, and the lowest hourly average speed in the AM peak for each segment and each direction was then identified.

3. Substitute real-world speeds for modeled speeds. A CUBE log file was created that adds segment IDs to ARC's highway network links based on the map in Figure A-2 above. (An attribute called "SEGMENT" must be added to the network first.) In addition, a CUBE/Voyager script was written to add the observed AM peak period 95th percentile travel times from the NaviGAtor data from step 2 to the AM peak period loaded network from step 1 based on segment ID. (The script adds a network attribute called "NAVMIN95THTIME" for this purpose.)

4. Estimate average travel time from every TAZ to every employment center. A CUBE/Voyager script was written to skim the AM peak loaded highway network produced by step 3 (including the NaviGAtor based speeds) to determine the shortest travel times (by auto) for all I-J pairs in the model. This includes the "terminal time"—the time it takes to access the car at the trip's origin (e.g., walking from home to the car) plus the time it takes to access the activity from the car (e.g., walking to work after parking the car) at the trip's destination. Since the employment centers are generally comprised of more than one TAZ, the travel time is estimated from each TAZ *i* to each employment center *N*.

5. Estimate the average number of workers that can reach each major employment center in 45 minutes or less. The estimated number of workers living in each TAZ is obtained from ARC model file `vehown.txt`. For each TAZ in the region, the number of workers that can reach that TAZ from all other TAZs (including the TAZ itself) is calculated by checking whether the travel time between every *i-j* pair of TAZs is less than or equal to 45 minutes. For each *i-j* pair where it is, the workers living in TAZ *i* are added to the total number of workers that can reach TAZ *j* within 45 minutes. The average number of workers that can reach a given employment center is then calculated by summing the number of workers that can reach each TAZ within the employment center and dividing by the number of TAZs in the employment center.

6. Calculate the average employment-shed size for the 13 employment centers. The measure is the average employment-shed size in the region calculated over the 13 major employment centers, which is simply the average of the average number of workers that can reach each of the 13 major regional employment centers within 45 minutes by car.

Without significant investment in new transportation infrastructure and/or marked shifts in development patterns, travel demand forecasts predict that future employment-sheds in Atlanta will shrink compared to current levels. Therefore, an ambitious yet realistic target is to hold this measure at its current level. The corresponding staff proposed target and ranges for this measure are contained in Table A-1 below. The target and ranges are subject to change.

Table A-1 Target ranges for average number of workers that can reach a major employment center by car in 45 minutes in the AM peak period

Performance Dashboard Status	Value
Green	≥ 800,000 Workers
Yellow	≥ 720,000 and < 800,000 Workers
Red	< 720,000 Workers

Average number of workers that can reach a major employment center by transit in 45 minutes in the AM peak period

The methodology and data used to estimate this measure are similar to those described for cars above (see "Average number of workers that can reach a major employment center by car in 45 minutes in the AM peak period"), except that in step 4 ARC's model is used to calculate the average time it takes to travel by transit. Once again, it should be noted that ARC's model was modified for the purposes of developing this measure, and therefore the results do not necessarily reflect the official travel forecasts produced and endorsed by ARC. The calculation includes all transit modes (local bus, express bus, and rail) and access modes (walk to transit and drive to transit) and incorporates the NaviGAtor data for modes that utilize the freeway network. It also includes the travel time along the entire trip from the origin to the destination: walking, driving (if applicable), waiting, transferring (if applicable), and riding.

Without significant investment in new transportation infrastructure and/or marked shifts in development patterns, travel demand forecasts predict that future employment-sheds in Atlanta will shrink compared to current levels. Therefore, an ambitious yet realistic target is to hold this measure at its current level. The corresponding staff proposed target and ranges for this measure are contained in Table A-2 below. The target and ranges are subject to change.

Table A-2 Target ranges for average number of workers that can reach a major employment center by transit in 45 minutes in the AM peak period

Performance Dashboard Status	Value
Green	≥ 120,000 Workers
Yellow	≥ 110,000 and < 120,000 Workers
Red	< 110,000 Workers

Annual congestion cost per peak auto commuter

Annual congestion cost is supplied by the Texas Transportation Institute's (TTI) Urban Mobility Report. It is the estimated value of travel delay and excess fuel consumption. It is based on 24/7 real-world travel time data supplied to TTI by INRIX, covering the freeways and arterials in the Atlanta Urbanized Area. For more information, go to http://mobility.tamu.edu/files/2011/09/atlan.pdf. The values for years other than 2009 have been converted into 2009$ using national CPI-U data from ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt.

Even if significant investments were made in new transportation infrastructure and/or marked shifts occur in development patterns, travel demand forecasts predict that future congestion in Atlanta will continue to worsen compared to current levels, causing congestion costs to increase over time. Therefore, a very ambitious target is to hold this measure at its current level. The corresponding staff proposed target and ranges for this measure are contained in Table A-3 below. The target and ranges are subject to change.

Table A-3 Target ranges for annual congestion cost per peak auto commuter (2009$)

Performance Dashboard Status	Value
Green	≤ $1046
Yellow	> $1046 and ≤ $1151
Red	> $1151

Average work commute time

Average commute time is obtained from the 2009 and 2010 American Community Survey 1-Year Estimates for the Atlanta-Sandy Springs-Marietta Metro Area. Go to http://factfinder2.census.gov for more information.

Even if significant investments were made in new transportation infrastructure and/or marked shifts occur in development patterns, travel demand forecasts predict that future congestion in Atlanta will continue to worsen compared to current levels, causing average commute times to increase over time. Therefore, a very ambitious target is to hold this measure at its 2009 level. The staff proposed target and ranges for this measure are contained in Table A-4. The target and ranges are subject to change.

Table A-4 Target ranges for average work commute time

Performance Dashboard Status	Value
Green	≤ 30.1 Minutes
Yellow	> 30.1 and ≤ 33.1 Minutes
Red	> 33.1 Minutes

Average number of people traveling in HOT lanes during the weekday AM and PM peak periods

This measure is obtained for Atlanta only. It is defined as the average number of people in cars and buses utilizing high occupancy toll (HOT) lanes during the weekday AM and PM peak periods (6:00AM-10:00AM, 3:00PM-7:00PM). These trips are considered reliable.

The number of cars utilizing the I-85 HOT lanes on all non-holiday weekdays in October, November, and December 2011 was collected by the State Road and Tollway Authority (SRTA). SRTA counted the number of unique vehicles with transponders that accessed the HOT lanes during each day/peak period combination, regardless of how far they traveled in the lanes. These numbers were then scaled up using empirically-based adjustment factors to account for vehicles without transponders that also used the HOT lanes. The adjusted numbers are presented in Figure A-4 and Figure A-5 on page A-5.

Over the same timeframe, Dr. Randy Guensler's research group at Georgia Tech collected vehicle occupancy data for the HOT lanes. The estimated average vehicle occupancy (excluding buses) was 1.39. This factor was multiplied by SRTA's vehicle counts to estimate the average number of people in cars in the HOT lanes during the weekday peak periods: 13,800 people.

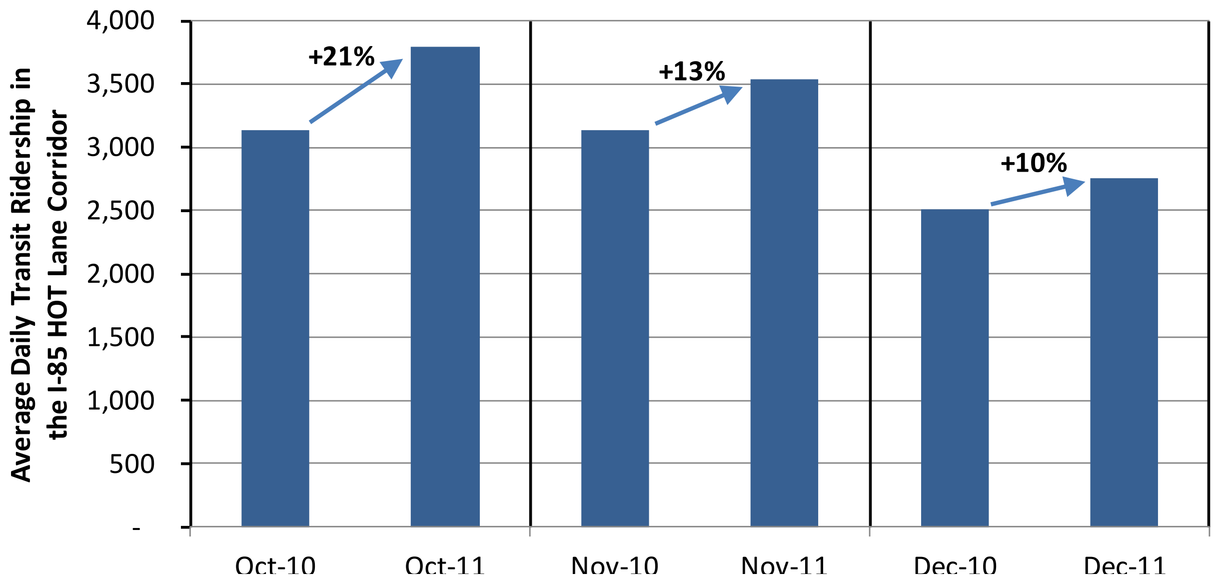
To complete the measure, express bus passengers in the HOT lanes were added. Since these routes operate almost exclusively during the peak periods, average daily ridership was deemed sufficient for this purpose. The relevant monthly ridership data were supplied by Gwinnett County Transit and *Xpress* and were used to estimate the average daily passengers in the HOT lanes from October—December, 2011: 3,400 people (see Table A-5).

Table A-5 Monthly and average daily ridership for express buses operating in the I-85 HOT lanes. Note that the decrease in ridership in November and December is a recurring seasonal effect caused by passengers taking more vacation time during the holidays.

	I-85 HOT Lane Transit Ridership			
Route	**Oct-11**	**Nov-11**	**Dec-11**	**Total**
GCT 101	14,887	12,726	10,698	38,311
GCT 102	6,376	5,385	4,600	16,361
GCT 103	29,256	25,966	21,045	76,267
Xpress 410	4,701	4,432	2,745	11,878
Xpress 411	5,997	5,607	4,849	16,453
Xpress 412	13,557	11,774	9,792	35,123
Xpress 413	2,153	2,335	1,982	6,470
Xpress 416	2,751	2,470	2,156	7,377
Total	79,678	70,695	57,867	208,240
Days	21	20	21	62
Daily Avg.	**3,794**	**3,535**	**2,756**	**3,359**

Note that the decrease in ridership in November and December in Table A-5 is a recurring seasonal effect caused by passengers taking more vacation time during the holidays. Compared to the same period in 2010, transit ridership in the I-85 HOT lane corridor increased by 15% on average during the fourth quarter of 2011. (See Figure A-3 on page A-7.) Combining the average

Figure A-3 Average daily transit ridership in the I-85 HOT lane corridor increased by 15% on average in the fourth quarter of 2011 compared to the same period in 2010.



daily passengers with the average number of people in cars produces a total average number of people utilizing the HOT lanes during the weekday AM and PM peak periods of 17,200.

To help put the recent performance of the HOT lanes into some context, the average number of people observed passing Jimmy Carter Boulevard on I-85 southbound between 7:00AM and 8:00AM during the weekdays from December 5 to December 16, 2011, (inclusive) is compared for the express lanes and the neighboring general purpose lanes in Table A-6 below. The average vehicles per hour data for the express lanes and general purpose lanes were supplied by GDOT's Traffic Management Center and are considered accurate to within +/- 10%. The average number of buses between 7:00AM and 8:00AM was estimated based on the time schedules for the routes operating in the corridor. The average number of passengers per bus was estimated from average daily ridership counts for the routes, divided by two to estimate the AM-only ridership, and scaled according to the fraction of total AM trips operating between 7:00AM and 8:00AM. The average vehicle occupancy for vehicles operating in the express and general purpose lanes was collected by Dr. Randy Guensler's research group at Georgia Tech.

Table A-6 shows that, on average for the first two weeks in December 2011, the I-85 southbound express lane at Jimmy Carter Boulevard moved 43% more people in the peak hour between 7:00AM and 8:00AM than did the individual general purpose lanes next to it, and it did so more reliably.

Table A-6 Comparison of the number of people moved by the I-85 express lane and general purpose lanes in the weekday morning peak hour. The express lane moved 43% more people on average than the individual general purpose lanes next to it.

	Average People Throughput Dec 5-16, 2011 7:00AM-8:00AM		
	Avg. Vehicles/ Hour/ Lane	Avg. People/ Vehicle	Avg. People/ Hour/ Lane
I-85 SB Express Lane @ Jimmy Carter Blvd			
Cars	1,432	1.39	1,990
Buses	23	28.3	651
Total			**2,641**
I-85 SB General Purpose Lane @ Jimmy Carter Blvd			
Vehicles	1,591	1.16	**1,846**

Target ranges for this measure have not yet been developed.

Figure A-4 Number of vehicles that utilized the I-85 HOT lanes in the AM peak period (6:00AM – 10:00AM) for all non-holiday weekdays in October, November, and December, 2011 (Source: SRTA)

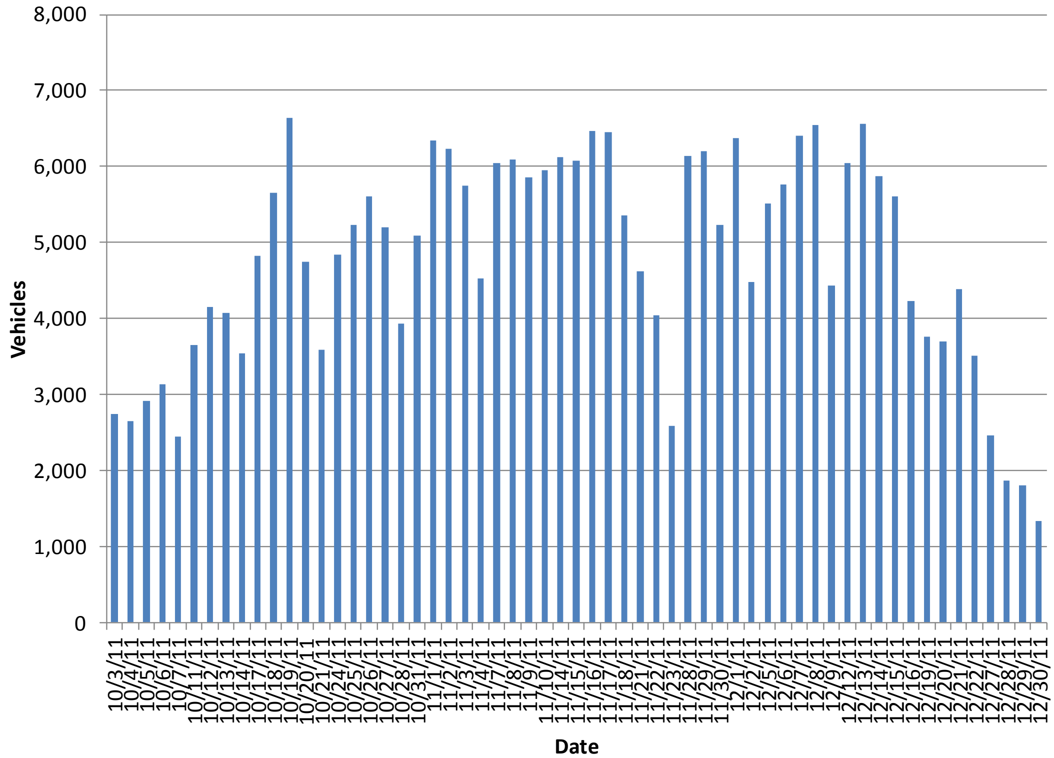
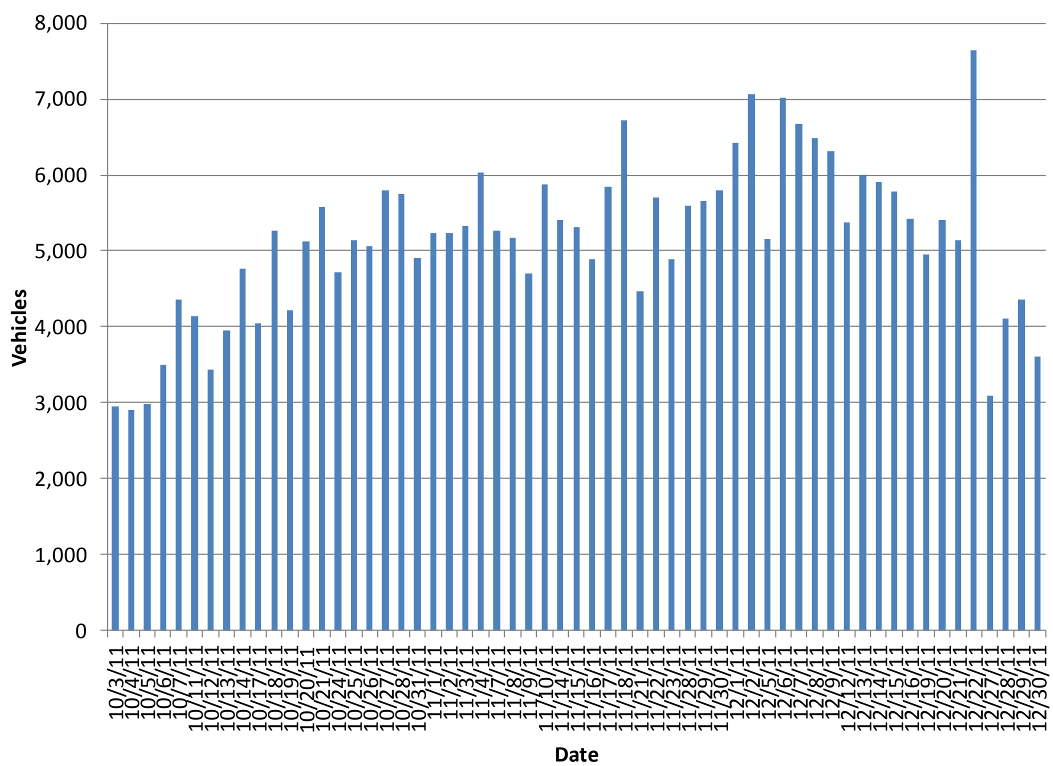


Figure A-5 Number of vehicles that utilized the I-85 HOT lanes in the PM peak period (3:00PM – 7:00PM) for all non-holiday weekdays in October, November, and December, 2011 (Source: SRTA)



Average number of people taking rail trips during the weekday AM and PM peak periods

This measure is obtained for Atlanta only. It is defined as the number of linked transit trips in the AM and PM peak periods (6:00-10:00AM, 3:00-7:00PM) using rail. These trips are considered reliable. Currently, this measure applies only to MARTA rail trips. MARTA's Research and Analysis Division collects rail station entry counts for all stations by time of day throughout the year and provided the FY 2010 and 2011 annual average weekday rail entries summed over 6:00AM-10:00AM and 3:00PM-7:00PM.

Target ranges for this measure have not yet been developed.

Daily hours of truck delay on Georgia Interstates

In 2010, trucks experienced about 7,600 hours of delay per day on Georgia's Interstates. The majority (76%) of statewide truck delay occurred in the Atlanta region. Trucks were delayed more in the afternoon peak period than the morning peak period. A large portion (45%) of statewide truck delay occurred in Atlanta's afternoon peak period. Outside the Atlanta region, most truck delay was isolated and moderate. Moderate construction delays in 2010 might be evident on I-75 between Macon and Florida.

In the afternoon peak period, major freight bottlenecks in the peak direction included:

- I-285 westbound on the top end between GA-400 and I-75
- I-75 northbound between I-285 and I-575
- I-85 northbound outside I-285 on the north side
- I-285 southbound approaching I-20 on the west side
- I-75/85 southbound between the I-75 and I-85 merge and I-20
- I-285 eastbound on the top end between GA-400 and I-85
- I-20 eastbound outside I-285 on the east side
- I-75 southbound south of I-675
- I-285 southbound south of I-85 on the east side
- I-20 eastbound just outside I-285 on the west side.

In the morning peak period, major freight bottlenecks in the peak direction included:

- I-85 southbound south of GA-316
- I-20 eastbound just outside I-285 on the west side
- I-75 southbound south of I-575
- I-75 southbound north of I-575.

The performance of Georgia's transportation network in moving freight can be quantified by the amount of delay trucks experience on Interstates. Two primary data sources for this measure were truck volumes from GDOT counters and truck speeds measured by the American Transportation Research Institute (ATRI).

In 2010, ATRI conducted a truck speed study on Georgia Interstates. Within one-mile highway segments, ATRI calculated weekday average speeds by time-of-day (TOD) period based on truck GPS traces. The TOD periods were: morning (6-10am), midday (10am-3pm), afternoon (3-7pm), and nighttime (7pm-6am). For the Atlanta region, the speeds in each direction were measured separately, and for the rest of the state, the speeds in both directions were combined.

The delay was obtained by considering the volume of trucks traveling on each highway segment and the additional time required to traverse each highway segment under congested speeds compared to a reference free-flow speed. The reference speed was assumed to be the speed limit, with the exception of high speed limit segments, where average nighttime speeds were used instead.

The results and the methodology are presented in the next sections.

The two primary data elements required for this measure were truck speed and truck volume. There existed no single consistent, statewide data source for both, therefore, the speed and volume data were combined from different sources. The process of calculating the delay measure consisted of the following steps:

1. interpolating truck percentage and directional percentage between actual count sites,
2. matching the directionality of the speeds and the volumes,

3. finding the appropriate volume sources to pair up with the speeds on each one-mile segment,
4. calculating the percentage of volume occurring in each time-of-day period,
5. finding the appropriate time-of-day percentage source to pair up with the speeds on each one-mile segment,
6. setting a reference speed to the speed limit, expect for segments where the speed limit was 65mph or 70 mph, in which cases the average observed off-peak speed was used as the reference speed, and
7. calculating the truck delay.

The first step involved obtaining the percentage of traffic volume that consisted of trucks and the percentage of traffic volume that flowed in each direction, that is, truck percentage and directional split. The truck volumes were obtained from a 2009 database of the State Traffic and Report Statistics (STARS). The STARS data consisted of both a) isolated actual counts sites, which included annual average daily traffic (AADT), truck percentage, and directional splits, and b) estimated sites, which included an estimated AADT, but not truck percentage or directional splits. Generally speaking, the truck percentages and directional splits were transferred from the actual locations to the estimated locations depending on the network configuration. For all estimated sites located between two actual sites, the average truck percentage and the average directional split of the two actual sites were applied. For end segments, where estimated sites had an actual site only on one side, the truck percentage and directional split of the actual site were transferred to the estimated sites. Locations near interchanges were also treated as end segments, and only the data from the nearest actual count location on the same facility as the estimated site were used.

There were several complicated special cases, where percentages could not simply be extended. In such cases when a prevailing flow could not be inferred, an even direction split and a truck percentage of 10% was assumed. The truck AADT was then calculated by multiplying the AADT by the truck percentage and by the directional split. The volume data were ready to match up with the speed data.

The second step required ensuring that the directionality of the count data matched that of the speed data at each location in the Atlanta region. This was done by matching the dominant direction of the count links with the dominant direction of the speed links as north, south, east, and west, respectively. ATRI defined directions on I-285 as inner loop and outer loop, which were then translated as north, south, east or west, depending on the specific location. This mapping was ready to use later on.

The third step was to combine the actual speed and volume data. The geographic shapes of the ATRI speeds and STARS volumes were slightly offset and of varying segmentation. The results were to be stored in the ATRI file, with its higher-resolution one-mile segments. Therefore, for each ATRI one-mile link, the best STARS link was sought. The approach chosen was to find the STARS link that had the largest common area with the ATRI link. The steps involved: the ATRI links were buffered 10 feet on each side, the STARS links were buffered 200 feet on each side, the buffers were intersected with each other, the intersected shapes were buffered by their STARS ID, the area of the resultant shapes were calculated, and the calculated area was divided by the area of the ATRI link. This resultant fraction represents the portion of the ATRI buffer occupied by a relevant STARS link. The STARS link with the largest fraction was chosen to transfer its volume to the ATRI link. The direction identified in the previous step was then used to ensure the appropriate set of properties was inherited.

With the truck AADT combined with the average speed data, average daily truck delay could be calculated. However, to leverage the ATRI speeds at each time-of-day period, time-of-day period specific volumes were necessary. For this fourth step, representative count data was obtained for automated traffic recorder (ATR) sites on Interstates throughout the state. A series of queries condensed counts of vehicles on each lane for each hour of weekdays in March 2010 for each ATR site to a percentage of truck volume that occurs in each time-of-day period at each site. For example, the results could indicate that 30% of the trucks passing a particular site passed in the morning peak period (6-10am).

In the fifth step, these TOD percentage data were transferred to the appropriate ATRI link to apply to the previously-obtained truck AADT. Though in many cases the ATR sites matched the STARS locations, the timing and sequence of the analysis necessitated a separate matching process. An initial approach searched for the closest ATR site to each ATRI link. In most cases, this successfully applied a reasonable TOD percentage to ATRI links. However, in several cases, the closest ATR link was not a reasonable choice given the network structure. These cases were manually identified and corrected. In some cases where ATR sites were not available or did not exist (e.g., I-285 top end), other approximations were made (e.g., I-285 top end inherited the TOD percentages of another I-285 ATR site).

The calculation of delay requires comparing the measured speed against some reference, presumably free-flow speed. For this measure, the reference speed was assumed to the speed limit. However, the sixth step required adjusting the reference speed for high speed limit links where the maximum night time speeds were actually lower than the speed limit. A possible reason for this would be truck engine governors that regulate maximum speed. The reference speeds were adjusted for links with a 65 mph or 70 mph speed limit. Table A-7 below lists the average nighttime speeds for each speed limit for links inside and outside the Atlanta region. The observed average nighttime speeds on segments with 65 mph and 70 mph speed limits were anywhere between 2.9 mph and 6.5 mph below the posted speed limit and were thus used as the reference speed for those segments.

Table A-7 Observed nighttime average truck speeds on Georgia Interstates with corresponding posted speed limits

Posted Speed Limit (mph)	Atlanta Nighttime Average Truck Speed (mph)	Outside Atlanta Nighttime Average Truck Speed (mph)
45	N/A	45.0
50	50.0	N/A
55	54.8	54.7
60	59.1	58.7
65	**62.1**	**61.0**
70	**63.5**	**64.5**

Finally, in the seventh step the delay was calculated in hours for each one-mile link as:

$$TruckDelay = \sum_{TOD}\left((V_T)(P_{TOD})\left(\frac{1}{\bar{s}_{TOD}} - \frac{1}{s_{REF}} \right) \right)$$

Where V_T = Truck volume; P_{TOD} = percentage of truck volume occurring in each TOD period; $\bar{s}_{TOD}$ = average speed in each TOD period; and S_{REF} = reference speed.

Steps one, two, and three described above apply to the Atlanta region. Outside the Atlanta region, the process was somewhat different. The 2009 STARS AADT data served as the basis of the truck delay outside Atlanta, just as it did in Atlanta. However, because the ATRI speed data for each one-mile segment outside Atlanta was the average of the speeds in both directions, the directional split of the STARS counts was not utilized. One artifact of the sequence and timing of the analysis was that outside Atlanta, STARS estimated counts were not used, unlike in Atlanta. The truck AADT at each actual count STARS site was calculated by multiplying the truck percentage by the total AADT. The truck AADT was then applied to the intermediate links in a fashion similar to that described in step one, with the average truck AADT between two actual count sites being applied to all links linearly in between, and the truck AADT was applied from an actual site to all links in an end corridor.

The delay was then summed for all links in the state. The results are contained in Table A-8. These results are also mapped in detail in Figures A-6 through A-10 below to help identify the Interstate truck bottlenecks in the state. In 2010, trucks experienced about 7,600 hours of delay per day on Georgia's Interstates. The majority (76%) of that delay occurred in the Atlanta region. Trucks were delayed more in the afternoon peak period than the morning peak period. A large portion (45%) of the statewide truck delay occurred in Atlanta's afternoon peak period. Outside the Atlanta region, most delay was isolated and moderate. Moderate construction delays in 2010 might be evident on I-75 between Macon and Florida. While there were relatively minor delays in the reverse direction in the morning peak period, some reverse directions exhibited moderate delays in the afternoon peak period.

Outside the Atlanta region, most delay was isolated and moderate. Lower speeds were observed near weigh stations, welcome centers, rest areas, interchanges near concentrations of industry, and on segments with operational challenges. The estimated delay for these locations outside the Atlanta region was 415 hours per day, which is approximately 23% of the 1,831 hours of delay outside of Atlanta and 5% of the 7,578 hours of delay statewide.

Target ranges for this measure have not yet been developed.

Table A-8 Estimated truck hours of delay on Georgia Interstates in 2010

	Truck Hours of Delay		
Period	Atlanta	Outside Atlanta	Total
6 AM – 10 AM	1,503	288	1,791
10 AM – 3 PM	643	719	1,362
3 PM – 7 PM	3,444	474	3,918
7 PM – 6 AM	157	350	507
TOTAL	5,747	1,831	7,578

Figure A-6 Estimated 2010 daily truck hours of delay per mile on Georgia's Interstates

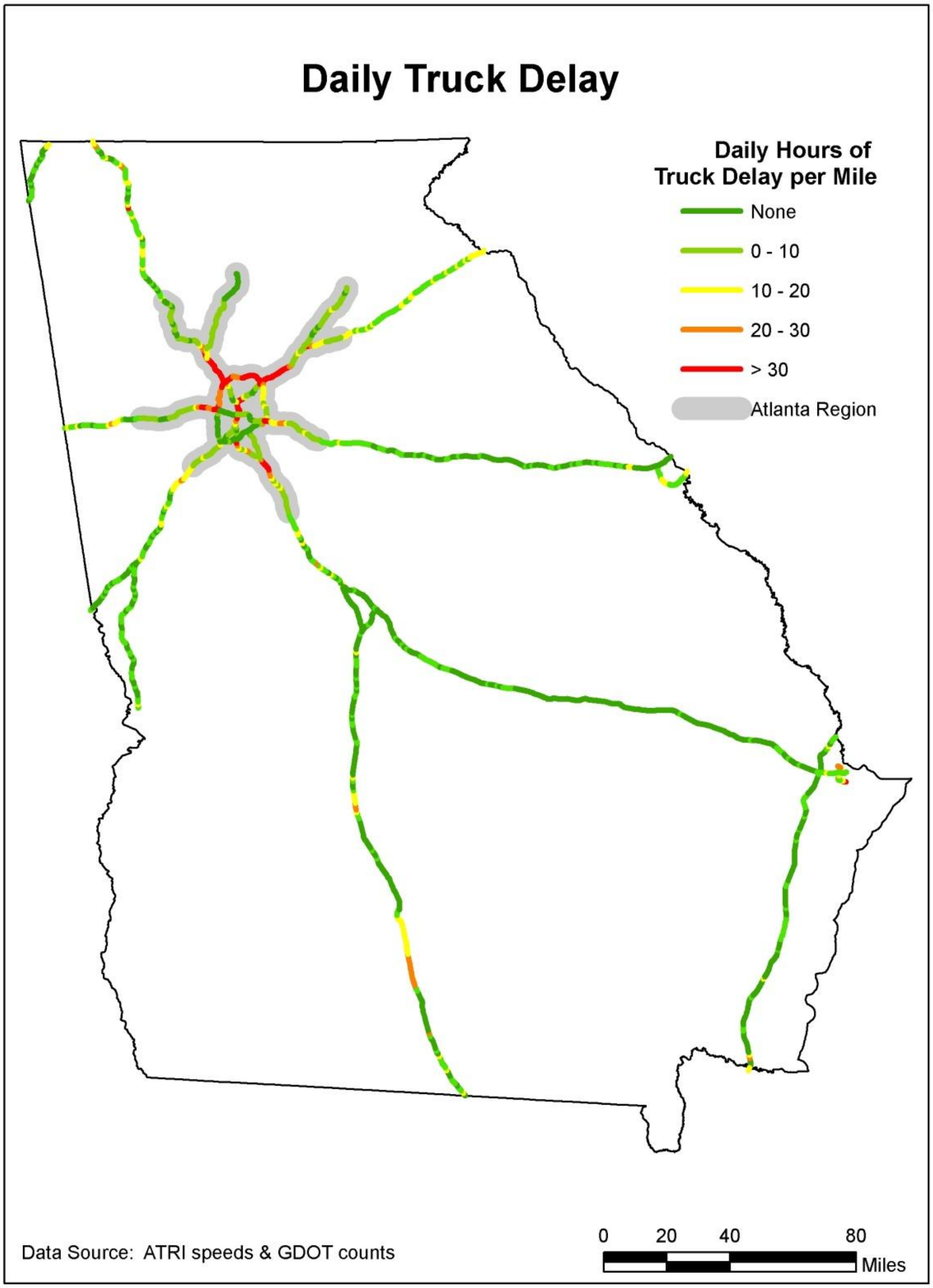


Figure A-7 Estimated 2010 truck hours of delay per mile per day in the AM peak period (6:00AM – 10:00AM) and peak direction on Atlanta's Interstates

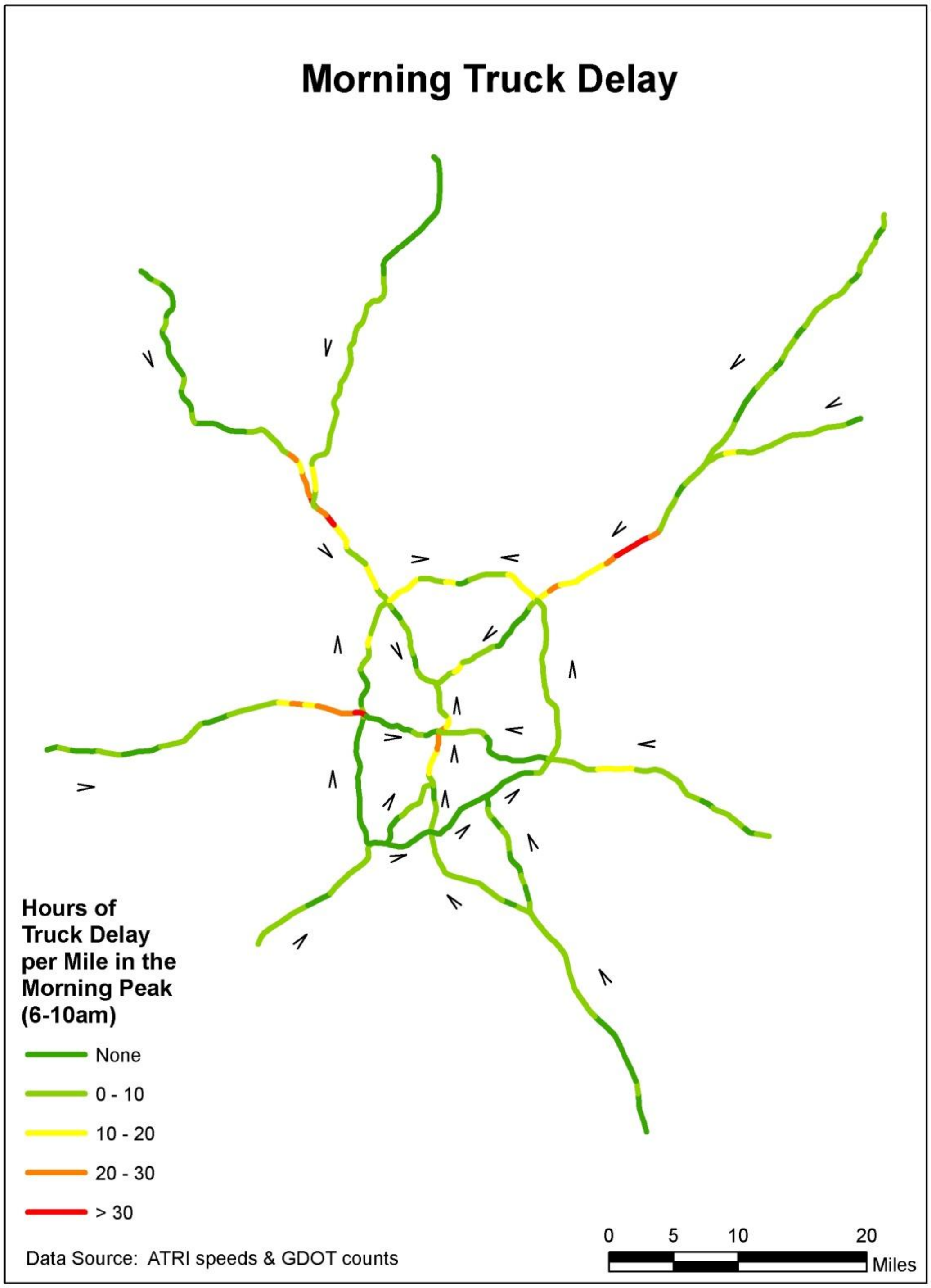


Figure A-8 Estimated 2010 truck hours of delay per mile per day in the AM peak period (6:00AM – 10:00AM) and reverse direction on Atlanta's Interstates

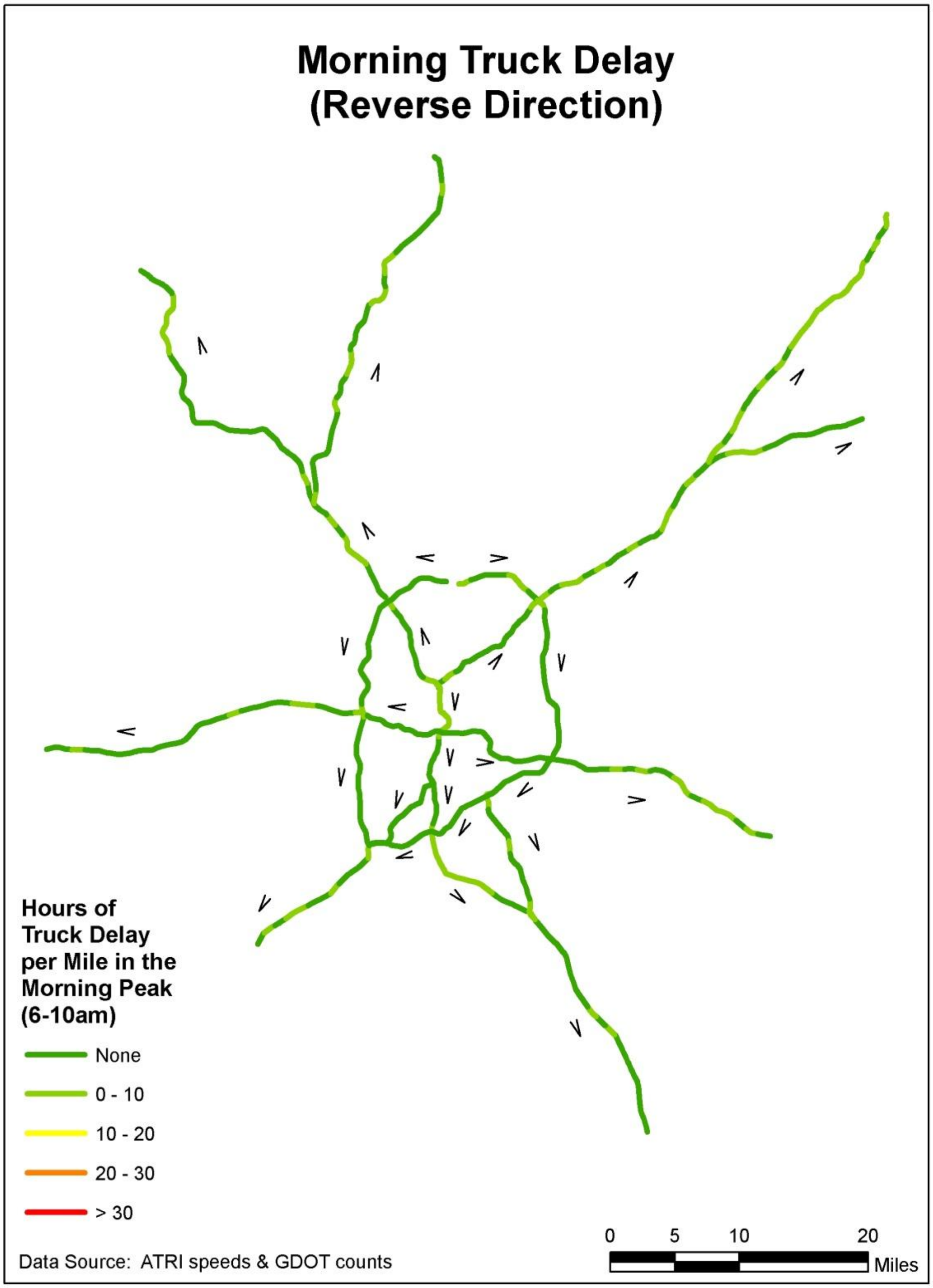


Figure A-9 Estimated 2010 truck hours of delay per mile per day in the PM peak period (3:00PM – 7:00PM) and peak direction on Atlanta's Interstates

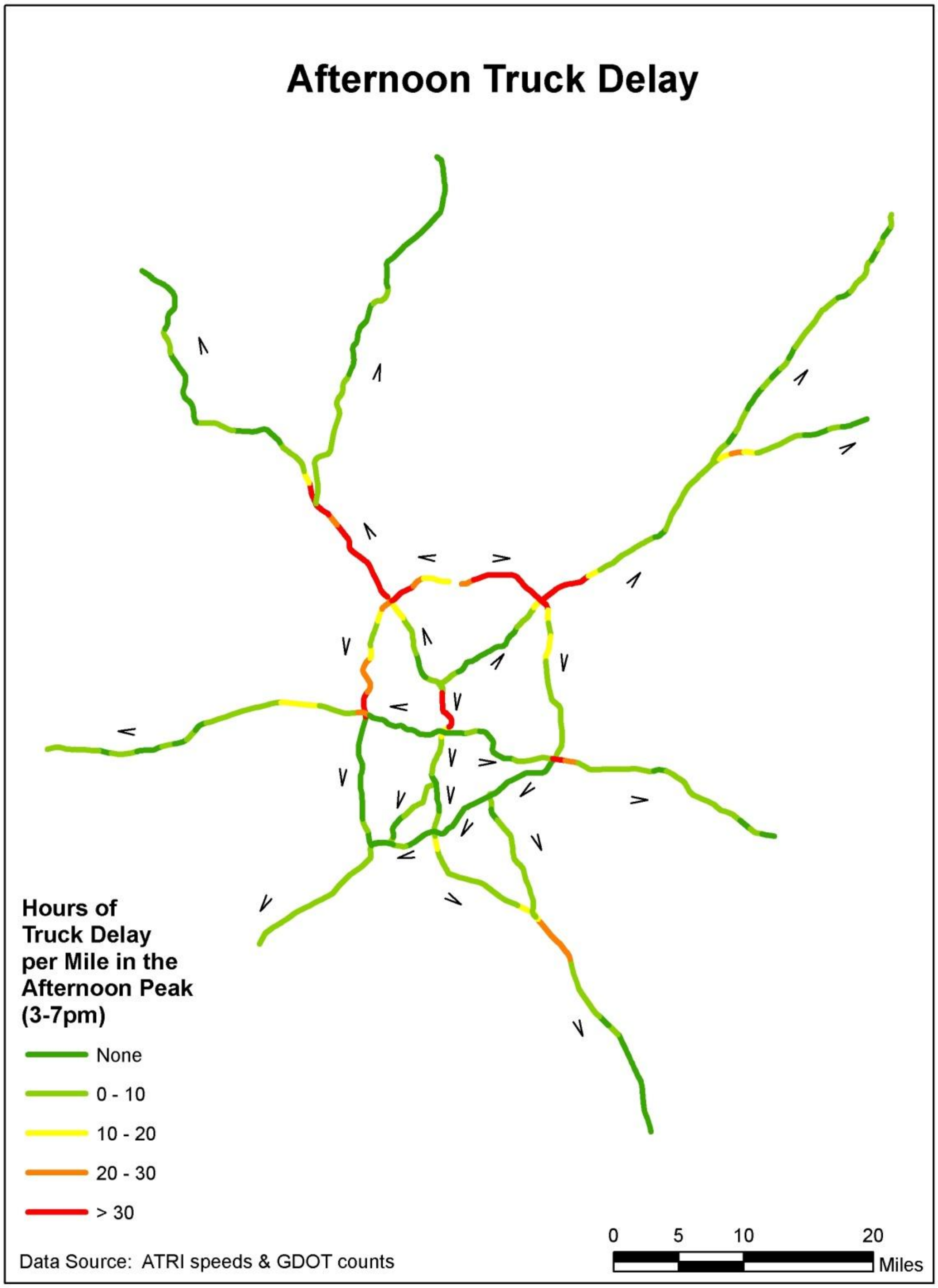
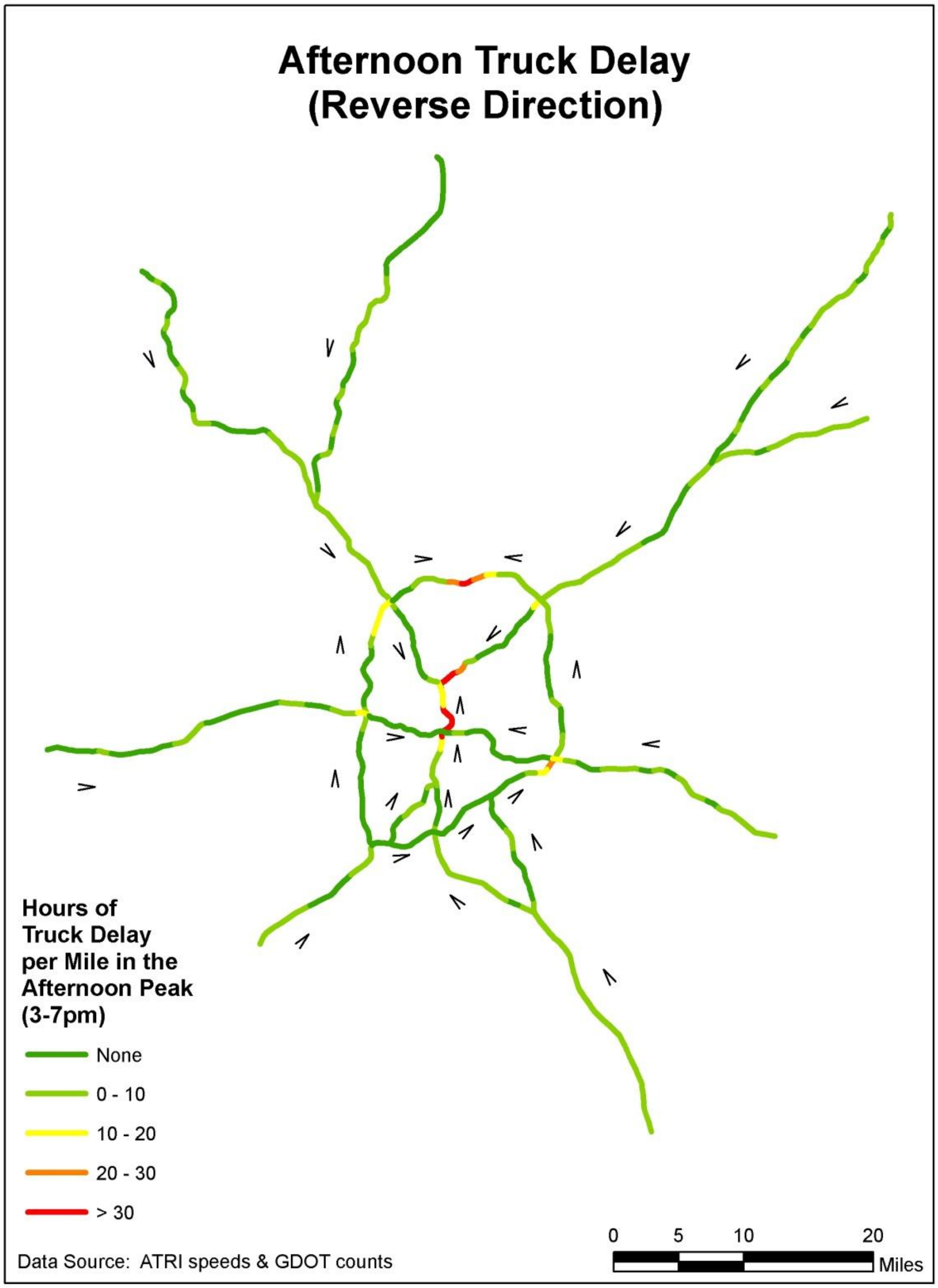


Figure A-10 Estimated 2010 truck hours of delay per mile per day in the PM peak period (3:00PM – 7:00PM) and reverse direction on Atlanta's Interstates



Percent of population within 10 miles of a 4-lane state or US route

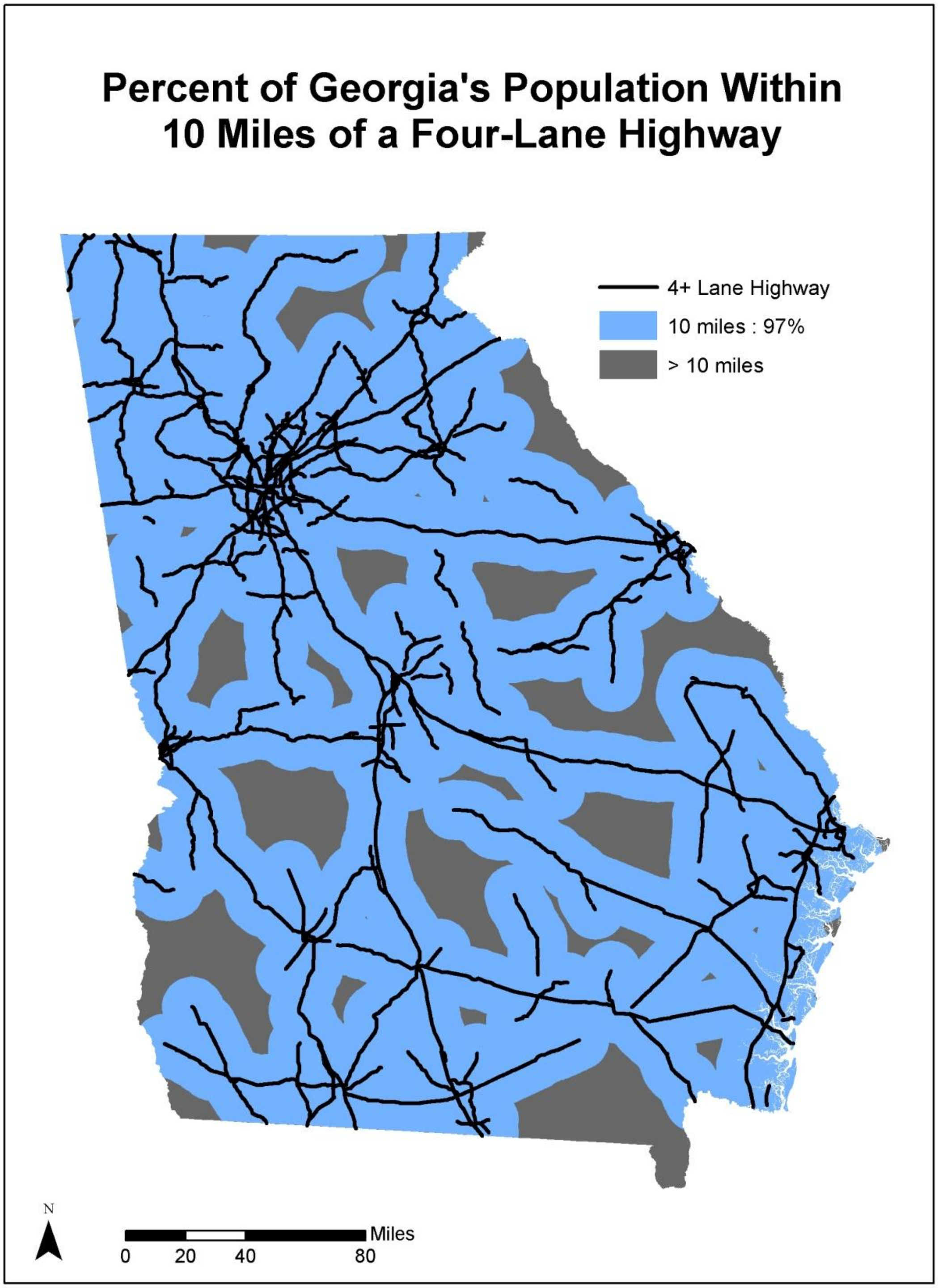
Initiated in 1989 by a resolution of the Georgia General Assembly and the Governor, the goal of the Governor's Road Improvement Program (GRIP) is to connect 95 percent of the cities in Georgia with a population of 2,500 or more to the interstate system. The GRIP system will also ensure that 98 percent of all areas of Georgia will be within 20 miles of a four-lane road.

For purposes of this measure, the staff-proposed target is 95% or more of the state's population living within 10 miles of a four-lane state or US route. It is estimated for the entire state using a GIS analysis of 2010 population data at the census tract level from the U.S. Census Bureau and statewide roadway data from GDOT. A 10-mile buffer is applied to all state routes with four or more lanes, and the percent of the total population living within this buffer is calculated (see Figure A- below). The staff proposed target and ranges for this measure are contained in Table A-9 below. The target and ranges are subject to change.

Table A-9 Target ranges for percent of population within 10 miles of a state or US route

Performance Dashboard Status	Value
Green	≥ 95%
Yellow	≥ 90% and < 95%
Red	< 90%

Figure A-11 Percent of Georgia's population within 10 miles of a four-lane state or US route



Percent of state and federal transportation funding spent on local roads

This measure applies statewide and is calculated by dividing the total amount of state and federal transportation funds spent/authorized in fiscal years 2010 and 2011 on non-state routes and temporary state routes by the total federal and state transportation funds spent/authorized in fiscal years 2010 and 2011, respectively. The corresponding staff proposed target and ranges for this measure are contained in Table A-10 below. The target and ranges are subject to change.

Table A-10 Target ranges for percent of state and federal funds spent on local routes

Performance Dashboard Status	Value
Green	≥ 20%
Yellow	≥ 10% and < 20%
Red	< 10%

Reduction in annual highway fatalities

GDOT considers safety in every stage of a project and in every investment decision. The American Association of State Highway and Transportation Officials (AASHTO) has adopted a national goal of reducing fatalities by 1000 each year. To assist in achieving this national goal, Georgia has set a target of reducing fatalities by 41 or more each year. This is based on our roadway types as well as the number of cars and trucks using our roadway system. This measure evaluates GDOT's efforts to reduce fatalities on Georgia's roads. The target and ranges are outlined in Table A-11 below.

Table A-11 Target ranges for reduction in annual highway fatalities

Performance Dashboard Status	Value
Green	≥ 41
Yellow	≥ 0 and < 41
Red	< 0

Percentage of Interstates meeting maintenance standards

Georgia is noted for its top rated roadways. By maintaining Interstates at a high level, more costly reconstruction can be avoided; extending the life of our pavements. This measure evaluates the health of pavements on Georgia's Interstates. This is not a rating of ride quality or smoothness, but rather of how well the interstate pavement structure is maintained.

The target is to maintain 90% of Georgia's Interstates at an average COPACES (Computerized Pavement Condition Evaluation System) Rating of 75 or more. The COPACES rating evaluates rutting, cracks and other surface deficiencies on a scale of 1 to 100. Reduced resources have made this target difficult to achieve. Through its Asset Management efforts GDOT is exploring ways to cost effectively maintain its Interstate system. The target and ranges for this measure are contained in Table A-12 below.

Table A-12 Target ranges percentage of Interstates meeting maintenance standards

Performance Dashboard Status	Value
Green	≥ 90
Yellow	≥ 80 and < 90
Red	< 80

Percentage of state-owned non-Interstate roads meeting maintenance standards

Georgia is noted for its top rated roadways. By maintaining non-Interstates at a high level, more costly reconstruction can be avoided; extending the life of our pavements. This measure evaluates the health of pavements on Georgia's non-Interstates. This is not a rating of ride quality or smoothness, but rather of how well the non-Interstate pavement structure is maintained.

The target is to maintain 90% of Georgia's non-Interstates at an average COPACES (Computerized Pavement Condition Evaluation System) Rating of 70 or more. The COPACES rating evaluates rutting, cracks and other surface deficiencies on a scale of 1 to 100.

Reduced resources have made this target difficult to achieve. Through its Asset Management efforts GDOT is exploring ways to cost effectively maintain its non-Interstate system. The target and ranges for this measure are contained in Table A-13 below.

Table A-13 ranges for percentage of state-owned non-Interstate roads meeting maintenance standards

Performance Dashboard Status	Value
Green	≥ 90
Yellow	≥ 80 and < 90
Red	< 80

Percent of state-owned bridges meeting GDOT standards

GDOT evaluates its bridges based on their strength and deck condition. This measure tracks the percent of State owned Bridges that meet or exceed a determined standard.

The target is to maintain State-owned bridges such that 85% meet or exceed the GDOT standard. GDOT makes every effort to assure the safety of Georgia's citizens. GDOT will continue to explore ways to maintain or improve the maintenance of our State-Owned bridges. The corresponding target and ranges for this measure are contained in Table A-14 below.

Table A-14 Target ranges for percent of state-owned bridges that meet or exceed GDOT standards

Performance Dashboard Status	Value
Green	≥ 85%
Yellow	≥ 70% and < 85%
Red	< 70%

Metro Atlanta highway morning/evening peak hour speeds

Due to the level of congestion in Metro Atlanta, travelers anticipate delays when traveling during peak morning and evening hours (6am-10am and 3pm-7pm). The goal is to reduce congestion such that a 30 minute trip during non-peak hours would take no more than about 40 minutes during peak hour. Likewise, a speed of 55 mph during non-peak hours would be reduced to about 40 mph during peak hour. This measure tracks average speeds across several key Metro-Atlanta roadways during morning peak hours of travel.

GDOT has set a peak hour target of 40 mph or better for its Interstate system. Addressing the issue of congestion within the Atlanta region is a challenge that will require time and resources. GDOT is exploring several options to improve congestion and provide choices including implementation of HOT Lanes on the I-85 North corridor, Ramp Metering, improvements to various interchanges and additional capacity to corridors where appropriate. The target and ranges for this measure are contained in Table A-15.

Table A-15 Target ranges for AM/PM peak hour operating speeds in key corridors

Performance Dashboard Status	Value
Green	≥ 40 MPH
Yellow	≥ 35 MPH and < 40 MPH
Red	< 35 MPH

Average HERO response time

A roadway incident can delay traffic and present a hazard to travelers. By clearing a blocked lane one minute sooner, we could save our traveling public 4 to 6 minutes of delay. This measure tracks the time it takes a HERO unit to reach the scene from the time of notification.

The target is to reduce incident response time to 10 minutes or less. GDOT is exploring options to add resources to corridors with the highest incident rates.

The value reported here is the average HERO response time over the most recent six months of data. (GDOT reports each month separately as part of its on-line GDOT Performance Management Dashboard.) In the current report, the six months covered are July through December 2011. The target and ranges for this measure are contained in Table A-16 below.

Table A-16 Target ranges for average HERO response time

Performance Dashboard Status	Value
Green	≤ 10 Minutes
Yellow	> 10 and ≤ 15 Minutes
Red	> 15 Minutes

Percent of commute trips to major employment centers on transit

This measure is estimated using ARC's travel demand model for the year 2010. The estimated number of home-based work (i.e., commute) person trips made to the 13 major employment centers (as defined in Figure A-1 above) on transit are divided by the estimated total number of home-based work person trips to the employment centers using all modes.

Historically, the shortage of transit funds for the region, coupled with present and possibly future limitations pose significant barriers to transit capital and operations expansion in the region. Given these challenges, a realistic target is to hold this measure at its 2010 level. The staff proposed target and ranges for this measure are contained in Table A-17 below. The target and ranges are subject to change.

Table A-17 Target ranges for percent of commute trips made by transit

Performance Dashboard Status	Value
Green	≥ 11.3%
Yellow	≥ 10.2% and < 11.3%
Red	< 10.2%

Average transit operating cost per passenger

This measure is obtained for Metro Atlanta using data downloaded from the 2009 and 2010 National Transit Database on-line: http://www.ntdprogram.gov/ntdprogram/data.htm. It is averaged over all major transit operators in the region, including vanpools. The target ranges for this measure are contained in Table A-18 below. Values for years other than 2009 have been converted into 2009$ using Atlanta-Sandy Springs-Marietta Metro Area CPI-U data from http://www.bls.gov/eag/eag.ga_atlanta_msa.htm.

Table A-18 Target ranges for average transit operating cost per passenger (2009$)

Performance Dashboard Status	Value
Green	≤ $2.66
Yellow	> $2.66 and ≤ $2.93
Red	> $2.93

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Appendix B: Project Alignment with SSTP Objectives—Data and Methodology

Table B-1 Goals and objectives from the Statewide Strategic Transportation Plan (SSTP)

Goal	Objective
Supporting Georgia's economic growth and competitiveness	Improved access to jobs, encouraging growth in private-sector employment, work force
	Reduction in traffic congestion costs
	Improved efficiency, reliability of commutes in major Metropolitan areas
	Efficiency and reliability of freight, cargo, and goods movement
	Border to border and interregional connectivity
	Support for local connectivity to statewide transportation network
Ensuring safety and security	Reduction in crashes resulting in injury and loss of life
Maximizing the value of Georgia's assets, getting the most out of the existing network	Optimized capital asset management
	Optimized throughput of people and goods through network assets throughout the day
Minimize impact on the environment	Reduce emissions, improve air quality statewide, limit footprint

Table B-1 above lists the goals and objectives in the SSTP, with minor modifications made for consistency. This section describes the methodology for determining alignment of projects with these objectives, which consists of a three-step process:

1. A Geographic Information System (GIS)-based analysis of the planned locations of projects with respect to identified freight corridors, regional employment centers, and state routes;
2. An automated, preliminary assessment of the SSTP objective(s) supported by each project based on the project's program area (as determined through TPRO or the relevant MPO plan) and the results of the GIS-based analysis from step 1; and
3. Inspection of the automated results from steps 1 and 2 on a project-by-project basis to determine whether any objectives should be overridden or augmented based on detailed project descriptions/fact sheets, when available.

The process is designed to ensure that the objectives supported by each project are accurately, efficiently, and consistently identified. Instead of laboriously checking every project against every objective and relying on the person doing the evaluation to make the decision, this process uses basic project characteristics—location and program area—to automatically make a preliminary assessment of which objective(s) a project supports. Although some up-front work is necessary to gather project location information, the GIS analysis provides an initial, clear-cut and objective way to quickly identify projects that enhance freight corridors, serve employment centers, and/or connect the local network to existing state assets. However, there may be important project characteristics not captured by this preliminary assessment that can help refine the objectives. For example, if safety elements are cited in a project's fact sheet as an important part of the project, the preliminary assessment could be modified during the project-by-project review to include alignment with the safety objective, even if the project is not in the safety program area. During this review, objectives that were identified during the automated process can also be deselected if deemed unsuitable. Changing a project's default program area might also be warranted during the review, although this is a rare occurrence. Rationale for any adjustments to the automated results is documented.

Once the three-step process is complete, the number of projects supporting each objective is summarized, and the estimated costs of all projects supporting each objective are totaled. Summary reports can provide, for example, information such as the number of projects that will "improve access to jobs" or the estimated total project cost associated with "reducing traffic congestion."

The three steps of the process are summarized in Table B-2 and described in more detail below.

Rules for Classification

Step 1: GIS-Based Analysis

The first step in determining alignment of projects with SSTP objectives is a GIS-based analysis. Project locations are evaluated relative to regional employment centers, freight corridors, and existing state assets (i.e., state routes, including Interstates).

Proximity to Regional Employment Centers

A project's proximity to a regional employment center(s) serves as a proxy as to whether it supports the SSTP objective of "improved access to jobs." Projects that are partially or entirely within a certain distance are assumed to support this objective. Regional centers (if any) outside of the 20-county Atlanta region still need to be identified. However, for the 20-county Atlanta region, the proposed criterion is three miles from the border of any of the 13 major employment centers depicted in Figure A-1 for projects in PLAN 2040, and or the 22 regional centers and regional town centers, as defined by ARC (see Figure B-1) for purposes of analyzing the Atlanta projects proposed for funding under the Transportation Investment Act of 2010[6]:

Regional Centers

City Center	Delk Road TOD	Northlake
Midtown	Emory	P'tree Corners
Atlantic Station	Gwinnett	Perimeter
Buckhead	Hartsfield	Sandtown
Buckhead South	Mtn. Industrial	Sandy Springs
Cumberland	North Point	Town Center

Regional Town Centers

Decatur	Lawrenceville	Marietta

The three-mile threshold is based on an analysis using ARC's travel demand model to identify roadways in the region where (in 2010) more than 50% (i.e., a majority) of the traffic in one or both peak periods is comprised of trips traveling to, from, or within these regional centers. These roadways are highlighted in red in Figure B-2. The three-mile buffers include most of these roadways, and therefore it is expected that projects within these buffers will serve primarily regional center-related trips during the peak periods. This is consistent with the strategic goals outlined by IT3 and the SSTP for arterial roadway projects. Figure B-3 shows those ARC projects that intersect the 3 mile buffer around the employment centers. (Note: Parts of projects in different locations are often grouped together in a single project shape, which causes some of the inconsistencies in Figure B-3.)

[6] The regional centers and regional town centers listed are consistent with those in Atlanta special district's Transportation Investment Act of 2010 investment criteria.

Table B-2 Summary of three-step process for determining alignment of projects with SSTP objectives

		Objective									
	Criterion	Improve Access to Jobs	Reduce Traffic Congestion	Improve Efficiency & Reliability of Commutes	Improve Efficiency & Reliability of Freight	Improve Border-To-Border & Interregional Connectivity	Support Local Connectivity to Statewide Network	Reduce Number of Crashes	Optimize Asset Management	Optimize Throughput of People & Goods	Reduce Emissions, Improve Air Quality, Limit Footprint
1. GIS-Based Analysis	Is near a center	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Is near a freight corridor	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐
	Is near an interstate or state route	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐
2. Program Area Analysis	General Purpose Roadway Capacity	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
	Roadway Maintenance	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐
	Traffic Ops/ITS	☐	☐	☒	☐	☐	☐	☐	☐	☒	☐
	Freight	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐
	Bike/Ped	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒
	Transit System Expansion	☒	☐	☐	☐	☐	☐	☐	☐	☒	☐
	Core (Existing) Transit	☐	☐	☐	☐	☐	☐	☐	☒	☒	☐
	Safety	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐
	HOV	☒	☐	☐	☐	☐	☐	☐	☐	☒	☐
	HOT	☒	☐	☒	☐	☐	☐	☐	☐	☒	☐
	TDM	☐	☐	☐	☐	☐	☐	☐	☐	☒	☐
3. Project Description-Based Analysis	Contains safety elements	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐
	Contains bike/ped elements	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒
	Provides managed lanes	☐	☐	☒	☐	☐	☐	☐	☐	☒	☐
	Provides transit service on rail or managed lanes	☐	☐	☒	☐	☐	☐	☐	☐	☒	☐
	Provides transit service that relieves congestion	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐
	Improves freight connectivity/ access/capacity	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐
	Improves statewide/ interregional connectivity	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐
	Is funded by CMAQ	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒

Figure B-1 Metro Atlanta regional centers and regional town centers as defined by ARC for use in the GIS analysis of Atlanta projects proposed for funding under the Transportation Investment Act of 2010

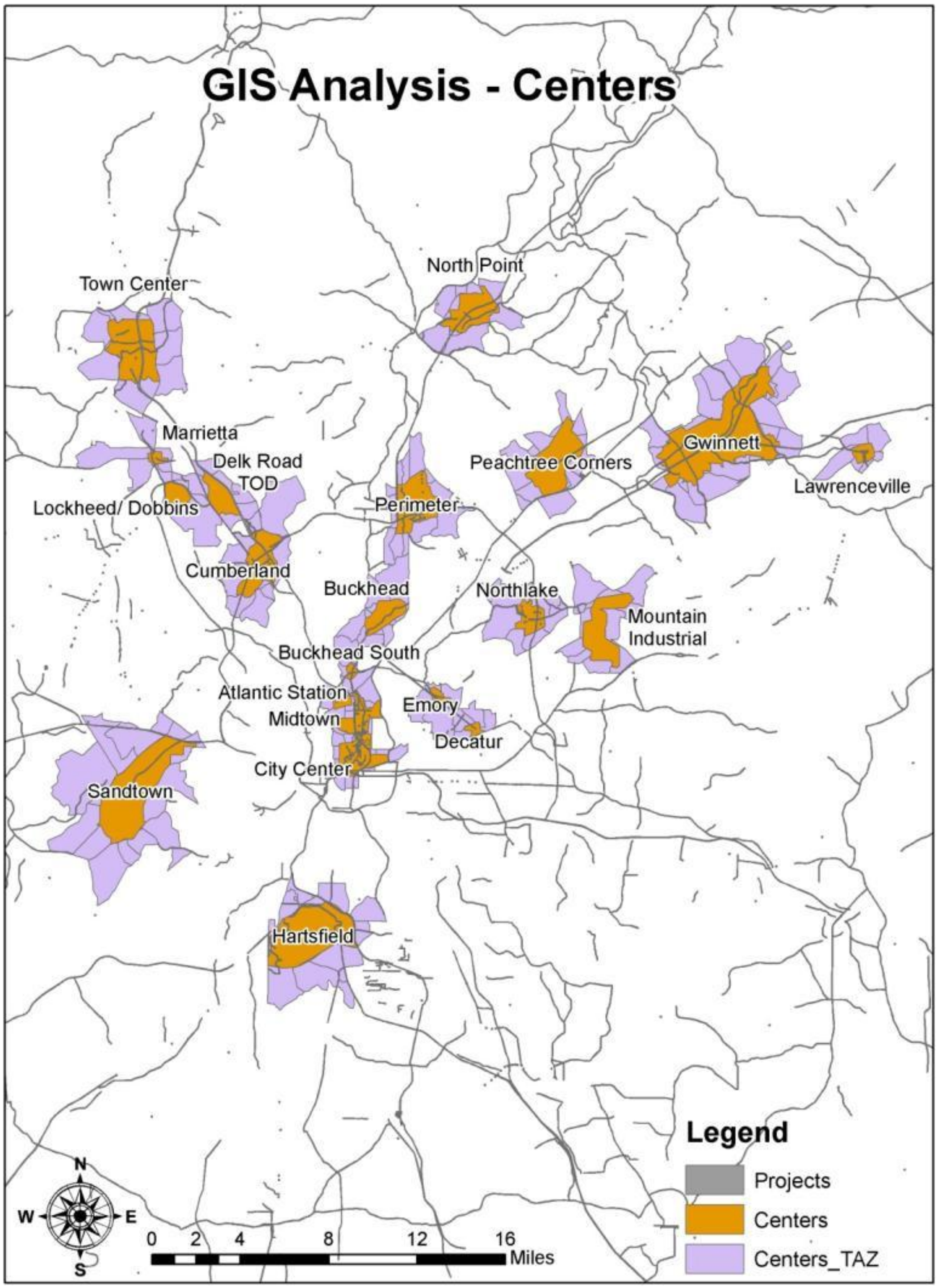


Figure B-2 Roadways where greater than 50% of traffic in the peak periods is related to the major regional centers

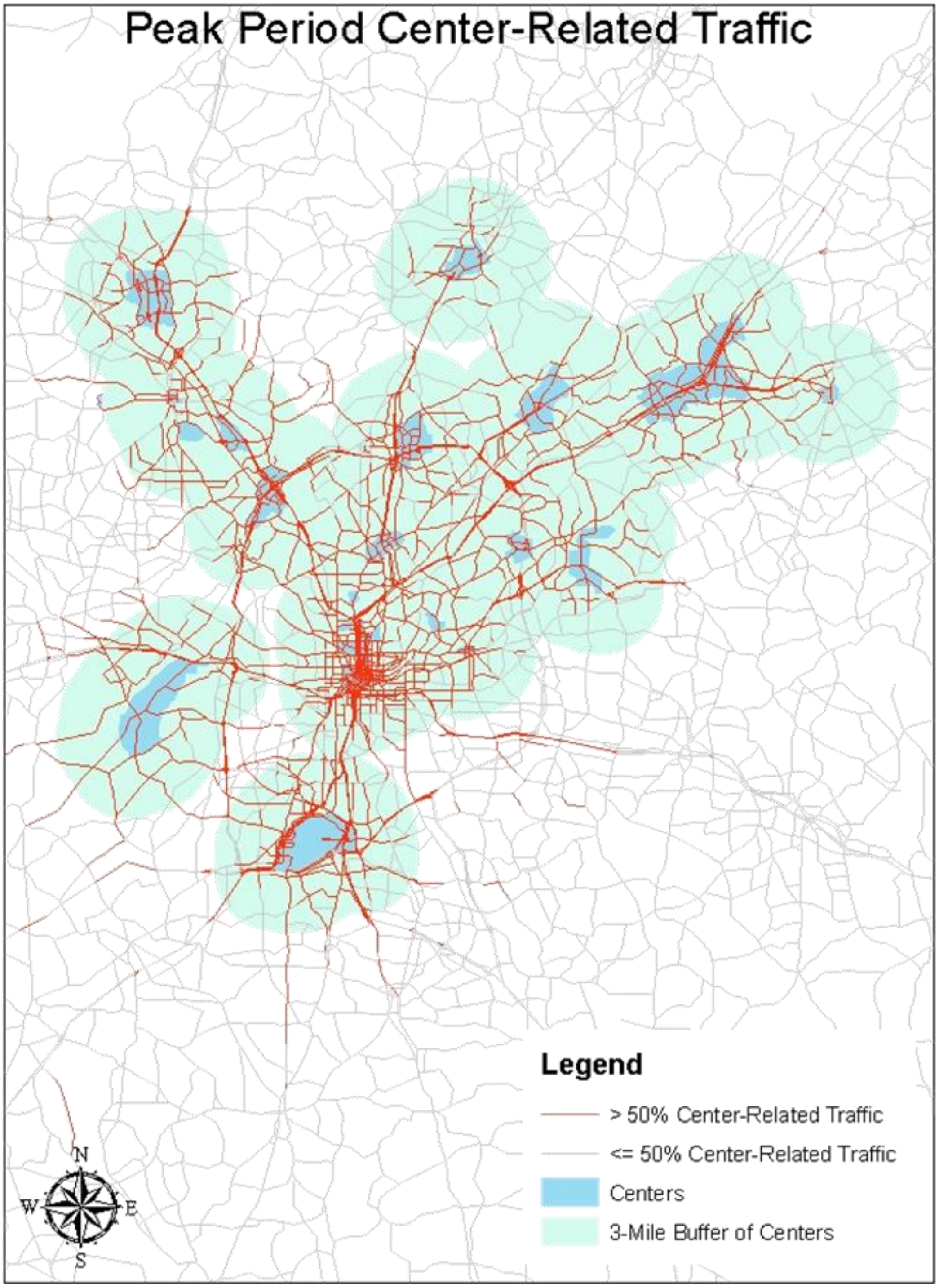
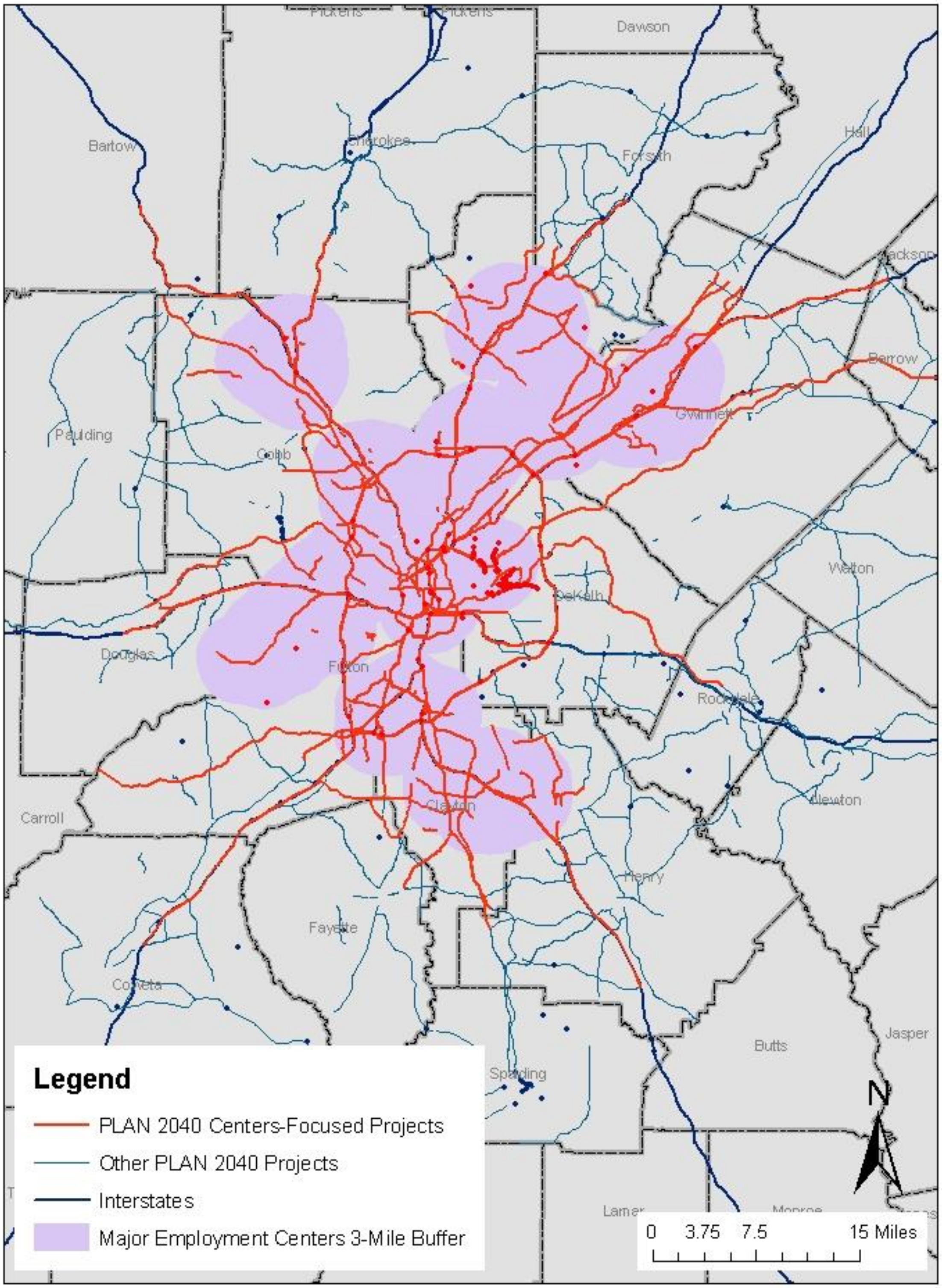


Figure B-3 GIS analysis of PLAN 2040 centers-focused projects



Freight

Projects near freight corridors are likely to "improve efficiency and reliability of freight." Statewide freight corridors will eventually be identified in GDOT's freight and logistics study but are not yet available for this report. In the Atlanta region, ARC's ASTROMAP truck routes are already identified and are used for this analysis. Ideally, a project that improves freight efficiency would run along the freight route for the entire length of the project. However, a method was needed to deal with the intricacies of the data (freight routes as lines and projects as polygons) as well as the partial overlap of project extents. Project proximity to the freight routes is determined by a ratio. The freight routes are buffered 100 feet on each side to match the project polygon dimensions. Then, the ratio is calculated of the project area inside the freight buffer to the entire project area. The map in Figure B-4 highlights projects with freight area ratios greater than 0.50—that is, more than half of the project aligns with an ASTROMAP corridor, and thus it is assumed that they support improved efficiency and reliability of freight.

Support for Local Connectivity to Statewide Transportation Network

The approach to evaluating the support for local connectivity to the statewide transportation network is a GIS analysis of proximity of projects to state routes or Interstates. Projects that are partially or entirely within a half mile of state routes or Interstates, but not on a state route, are assumed to enhance local connectivity to the statewide network. Figure B-5 illustrates the GIS analysis of support for local connectivity to the statewide transportation network. Approximately 80% of the projects in the Atlanta region are within half a mile of a state route or Interstate.

Figure B-4 GIS analysis of ARC projects that align with ASTROMAP freight corridors

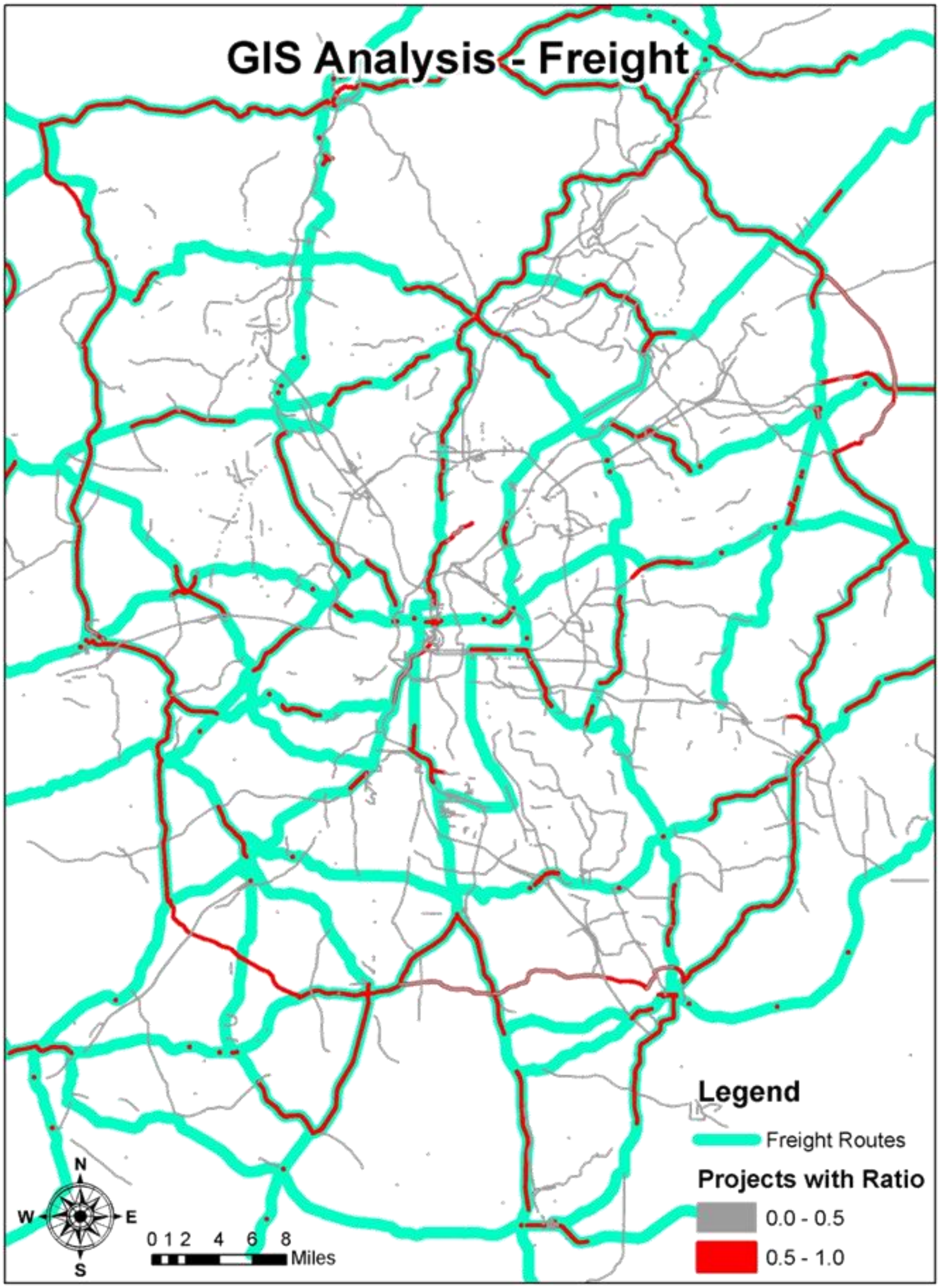
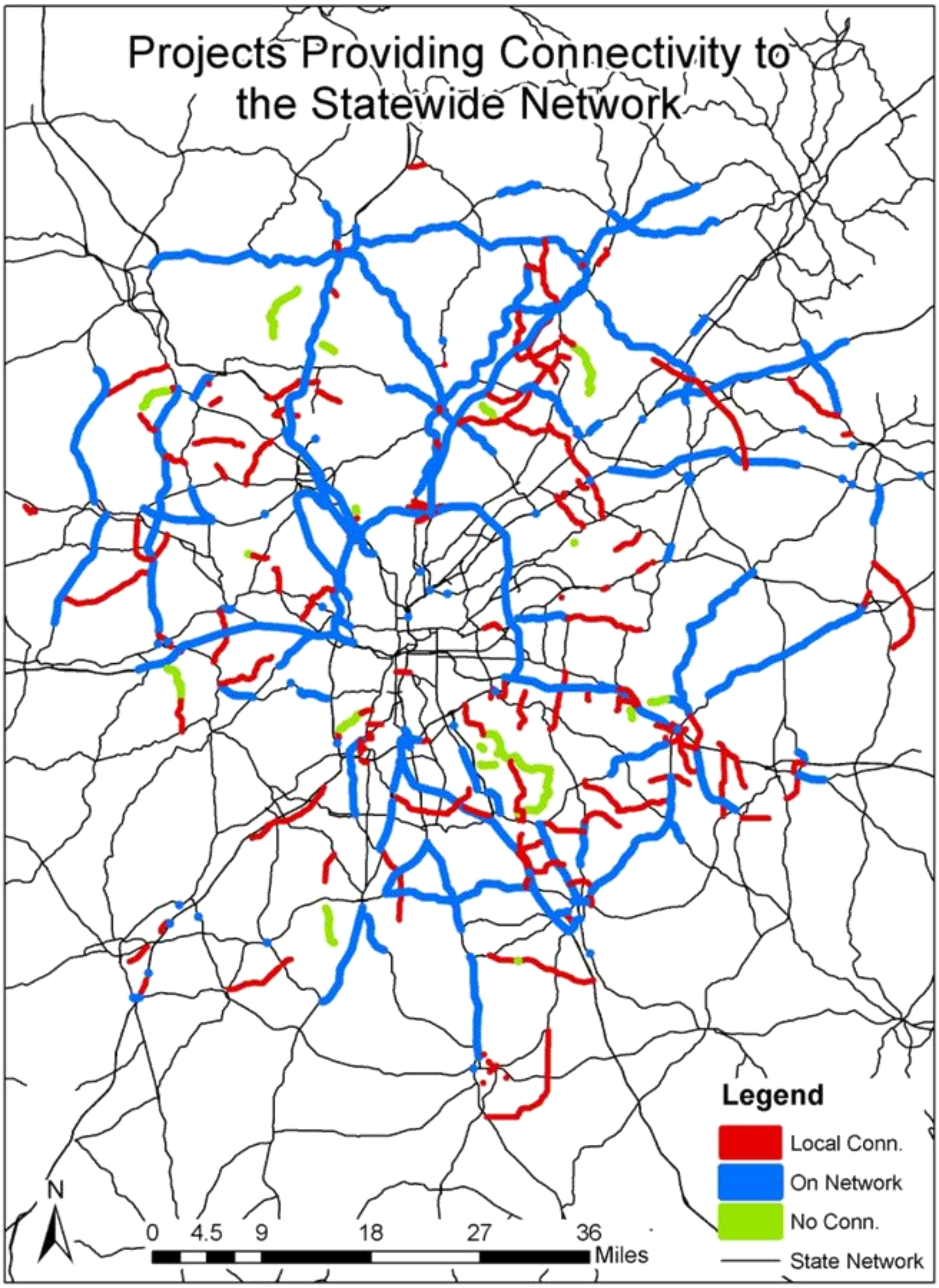


Figure B-5 GIS analysis of ARC projects that provide connectivity to the state transportation network



Step 2: Preliminary Assessment Based on Program Area and GIS Analysis

When the project data are imported from TPRO or the MPO plans, program area or project type should already be identified. Some adjustments are sometimes necessary, however, in order to classify all projects into a uniform set of program areas. All projects are classified into one of the following categories:

Program Areas

General Purpose Roadway Capacity	Roadway Maintenance
Traffic Ops/ITS	Freight
Bike/Ped	Transit System Expansion
Core (Existing) Transit	Safety
HOV	HOT
TDM	Other

Based on these program areas, by default projects are automatically classified as serving certain objectives as described below.

General Purpose Roadway Capacity

Definition: The General Purpose Roadway Capacity program area includes new roads, roadway widenings, interchanges, interstate improvements, bridges, etc.

Objectives supported: New arterial capacity projects support the "reduce traffic congestion costs" objective.

Rationale: Though factors such as the degree of existing congestion and induced demand affect the degree to which specific projects help reduce traffic congestion costs, most roadway capital projects impact traffic congestion. New roads provide additional travel paths, widening increases capacity, and interchanges improve traffic flow, all of which reduce congestion. However, during detailed project review for the initial report, any roadway capital project that clearly is not intended to reduce traffic congestion costs will have this objective removed. Future reports might fine-tune the objectives met by roadway capital projects, and/or the method for determining such.

Roadway Maintenance

Definition: The roadway maintenance program area includes resurfacing/rehabilitation/bridge maintenance projects.

Objectives supported: Roadway maintenance projects support the "optimize capital asset management" objective.

Rationale: Projects that manage assets already in place are critical. Given high demand and limited resources for asset management, optimization will become increasingly important to focus funding on high-impact asset management projects.

Traffic Operations and Intelligent Transportation Systems

Definition: The Traffic Operations and Intelligent Transportation Systems program area includes projects that improve or enhance intelligent transportation system networks, incident management program, or signal coordination and timing. The program area also includes projects that address an existing operational issue resulting in an improved level of service or reduction in delay or other congestion costs, such as turn lanes, traffic signal installations, and intersection improvements.

Objectives supported: Traffic operations and intelligent transportation system projects support the objective of "optimize throughput of people and goods through network assets throughout the day." Additionally, these projects support the objective of "improve efficiency, reliability of commutes in major metropolitan areas." For the purposes of this report, "in major metropolitan areas" is taken to mean "within a metropolitan planning organization (MPO) boundary."

Rationale: Traffic operations and intelligent transportation systems projects in general can greatly improve the performance of the transportation system at lower cost than new capital or capacity projects. They help maximize the value and get the most out of existing assets by optimizing throughput. These projects tend to be located in much-travelled and high-employment areas (which can be verified by other parts of the analysis) and, more importantly, improve reliability of travel. Thus, projects in this program area improve the efficiency and reliability of commutes. These projects also likely influence congestion. However, these operations and efficiency improvements are distinguishable enough from capacity addition that they do not automatically support the congestion objective.

Freight

Definition: This program area includes projects that enhance the flow of freight transported by trucks and/or rail, and projects that facilitate the transfer of freight between modes. Possible projects include those that address the demand for goods movement into, out of, and within the state as identified through the Statewide Freight and Logistics Study (ongoing), the Atlanta Regional Freight Mobility Plan, and the Atlanta Strategic Truck Route Master Plan adopted by the ARC.

Objectives supported: Freight (roadway), (freight) rail, and ports-related projects support the objective of "improved efficiency and reliability of freight, cargo, and goods movement."

Rationale: Though not traditionally identified as a separate program area, this catch-all freight program area is intended to capture those projects that are primarily focused on improving the efficiency and reliability of freight. In future reports, different sub-program areas might be identified to treat freight projects in more detail.

Bicycle & Pedestrian

Definition: Projects that provide bicycle and/or pedestrian infrastructure. The projects may include but are not limited to bicycle/pedestrian-specific projects and incorporation of bicycle/pedestrian infrastructure within other project types.

Objectives supported: Bicycle and pedestrian projects support the objectives "optimize throughput of people and goods through network assets throughout the day" and "reduce emissions, improve air quality statewide, and limit footprint."

Rationale: Additional strategically-located bicycle and pedestrian infrastructure can help meet transportation needs, offset demand for roadway capacity, and capitalize on transit investments. As such, bicycle and pedestrian projects can help optimize the throughput of people. Additionally, by offsetting vehicle trips, these projects support the environmental objective of reducing emissions, improving air quality, and limiting footprint.

Transit System Expansion

Definition: Transit System Expansion includes projects that will add new service to the existing system.

Objectives supported: New transit capacity projects support the objective "optimize throughput of people and goods through network assets throughout the day" and "improve access to jobs, encouraging growth in private-sector employment, work force."

Rationale: In a similar vein to bicycle and pedestrian projects offsetting certain types and segments of travel, investment in transit infrastructure can help optimize throughput of people by satisfying more person trips with fewer vehicles. Transit capital projects are assumed to be focused on employment centers and provide a primary mechanism for access to jobs.

Core (Existing) Transit

Definition: Projects or funding necessary to operate and maintain existing transit systems are included in this program area. Expenditures may include new, systematic replacement, upgrade, refurbishment, and other capital project expenditures.

Objectives supported: Existing transit projects support the objective "optimize capital asset management."

Rationale: Though this program area helps enable support for objectives served by transit capital projects, transit operations and maintenance is most directly related to capital asset management. Similar to and perhaps even more so than (roadway) asset management, given high demand and limited resources for asset management, optimization will become increasingly important to focus funding on high-impact asset management projects.

Safety

Definition: This program area includes projects that correct or improve a road location or feature with high potential for safety improvement, or address specific highway safety deficiencies, the objective of which is to reduce fatalities and serious injuries. Projects may include intersection improvements to address safety concerns, shoulder widenings, pedestrian/bicycle safety improvements, hazard eliminations at rail-roadway crossings, traffic calming measures, installation of guardrails, crash attenuators, signage, and pavement marking improvement projects, etc.

Objectives supported: Safety projects support the objective "reduce number of crashes."

Rationale: Though safety is an important consideration in all projects, certain projects focused exclusively or primarily on safety are identified in this program area. These projects clearly meet the safety objective, which is to reduce the number of crashes that result in injury or loss of life.

High-Occupancy Vehicle (HOV)

Definition: HOV projects add new HOV lanes or convert existing general purpose lanes into HOV lanes.

Objectives supported: HOV projects "improve access to jobs, encouraging growth in private-sector employment, work force," and "optimize throughput of people and goods through network assets throughout the day."

Rationale: By moving more people in fewer vehicles, HOV projects optimize the throughput of people. In addition, routes likely to be viable for HOV projects serve employment centers, thus improving access to jobs.

High Occupancy Toll (HOT)

Definition: HOT projects add new HOT lanes or convert existing general purpose or HOV lanes into HOT lanes.

Objectives supported: HOT projects "improve access to jobs, encouraging growth in private-sector employment, work force," "optimize throughput of people and goods through network assets throughout the day," and "improve efficiency, reliability of commutes in major metropolitan areas."

Rationale: Similar to HOV projects, HOT projects optimize the throughput of people by moving more people in fewer vehicle trips. HOT projects further support this objective by preventing breakdown of flow through the HOT lanes and by utilizing any excess capacity through dynamic pricing. Also in common with HOV projects, HOT projects serve employment centers. The addition of dynamic management, however, ensures HOT lanes can improve efficiency and reliability of commutes, which is not necessarily true for HOV lanes.

Travel Demand Management (TDM)

Definition: TDM projects attempt to reduce the number or length of trips by increasing vehicle occupancy or facilitating other alternatives to single occupancy vehicles (e.g., teleworking).

Objectives supported: TDM projects "optimize throughput of people and goods through network assets throughout the day."

Rationale: TDM projects focus on making better use of existing assets by reducing demand or shifting it to off-peak periods when there typically is an excess of transportation supply.

Step 3: Project Description

Information about what program area a project belongs to is not sufficient to fully specify objectives the might project serve. As the third step in the project classification process, additional information can be gleaned from the project description or similar field.

Contains Safety Elements

If the description mentions safety as part of the purpose, then a project supports the objective "reduce number of crashes."

Contains Bicycle/Pedestrian Element

If the description mentions bicycle and/or pedestrian elements, then the project supports the objectives "optimize throughput of people and goods through network assets throughout the day" and "reduce emissions, improve air quality statewide, and limit footprint."

Provides Managed Lanes

Projects that provide or involve managed lanes support the objectives "improve efficiency, reliability of commutes in major metropolitan areas" and "optimize throughput of people and goods through network assets throughout the day."

Provides Transit Service on Rail or Managed Lanes

Projects that provide transit service on rail or in managed lanes support the objectives "improve efficiency, reliability of commutes in major metropolitan areas" and "optimize throughput of people and goods through network assets throughout the day."

Provides Transit Service that Relieves Congestion

Transit projects that provides service that appears to substantially draw trips off a congested road network meet the objective "reduce traffic congestion."

Improves freight connectivity/access/capacity

A project that provides connectivity, access, or capacity to a port or other freight facility supports the objective "improve efficiency, reliability of freight, cargo, and goods movement."

Is Statewide

Characteristics of projects that contribute to "border to border and interregional connectivity" need to be identified in later reports.

Is Funded by CMAQ

Projects funded by Congestion Mitigation and Air Quality Improvement program (CMAQ) support the objective "reduce emissions, improve air quality statewide, limit footprint."

Project Database

A database has been created in Microsoft Access to help automate the process of reviewing projects, assigning objectives, and reporting/summarizing the results. (The database currently only contains ARC projects, but non-Atlanta projects may be appended to this database when the information is available.) The main tables in the database are "Planned Projects" and "Planned Phases." Although there is no limit to the information that could be included in the database, there are only a handful of data elements that must be included. The required data elements are listed in Table B-3 and Table B-4 below:

Table B-3 Required project data elements in the "Planned Projects" table

Name	Type	Description
Project ID	Text	Unique project identifier such as ARC ID or GDOT P.I.
Program Area	Text	Projects are classified into one of the following program areas: ○ Asset Management ○ Aviation ○ Bike/Ped ○ Freight ○ Roadway Capital ○ Safety ○ Traffic Ops/ITS ○ Transit Capital ○ Transit O&M ○ Other ○ HOV Lane ○ HOT Lane
GIS Freight	Number	Results of the GIS-based freight analysis: Percent overlap of the project's shapefile with the freight corridor shapefile.
GIS Centers	Yes/No	Results of the GIS-based centers analysis: Yes = Project is partially/entirely within 3 miles of a regional center; No = No part of project is within 3 miles of a regional center.
GIS Local Connectivity	Yes/No	Results of the GIS-based local connectivity analysis: Yes = Project is partially/entirely within X miles of a state route; No = No part of project is within X miles of a state route.

Table B-4 Data fields in the "Planned Phases" table

Name	Type	Description
Project ID	Text	Unique project identifier such as ARC ID or GDOT P.I.
Phase	Text	Project phase: PE, ROW, CST, etc.
Phase Status	Text	Whether or not the phase has been authorized. Phases that have been authorized will be moved to a list of authorized project phases, and the associated funds are assumed to have been spent.
Fiscal Year	Text	Fiscal year or range of years in which project phase is expected to be authorized.
Federal	Currency	Federal dollars planned for project phase.
State	Currency	State dollars planned for project phase.
Local	Currency	Local dollars planned for project phase.
Bond	Currency	Bond dollars planned for project phase.
Total	Currency	Total dollars planned for project phase.

In addition, a form has been developed in Microsoft Access that provides a graphical user interface for the project database. (An example screenshot is shown in Figure B-6 below.) The form allows an evaluator to quickly view all of the relevant project data and the associated objectives determined through the preliminary assessment in steps 1 and 2 as described above. The evaluator then has the option to override/augment the preliminary assessment based on detailed project information. The database is designed to keep track of modifications, and the evaluator is required to enter a reason for overriding the preliminary (default) assessment before he/she can make changes. Furthermore, drop-down menus and logic checks have been coded into the form as appropriate to speed data entry, help ensure consistency, and to avoid data entry errors.

Finally, a number of reports summarizing the project database contents (e.g., number of projects by program area, funds by program area, funds by objective) have been designed and may be generated at the click of a button in Access. Some sample screenshots are shown in Figure B-7 below.

Figure B-6 Sample screenshot of the project data graphical user interface form

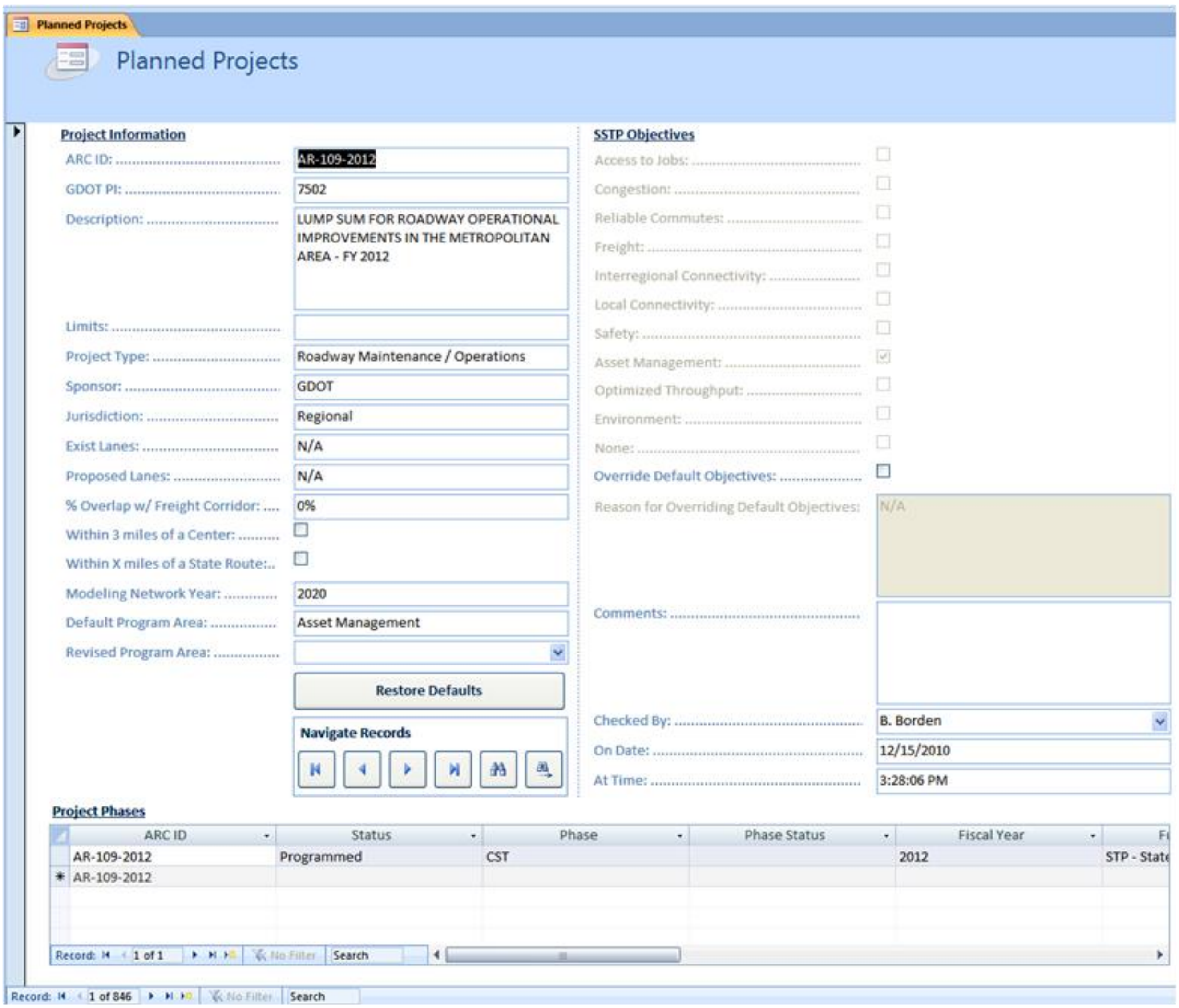


Figure B-7 Sample screenshot of database reports

Planned Projects | Number of Projects by Program Area | Program Areas | Planned Phases | Funds by Program Area

Funds by Program Area

Program Area	Federal Funds	State Funds	Local Funds	Bond Funds	Total Funds
Asset Management	$2,055,594,151	$431,127,203	$17,150,672	$0	$2,503,872,026
Bike/Ped	$535,024,731	$3,585,158	$233,297,305	$0	$771,907,194
Other	$914,794,036	$32,757,321	$253,773,063	$0	$1,201,324,420
Roadway Capital	$8,983,430,414	$2,096,948,142	$2,292,718,417	$1,394,498,631	$14,767,595,604
Safety	$351,662,850	$39,073,650	$0	$0	$390,736,500
Traffic Ops/ITS	$1,041,430,320	$184,013,690	$346,640,589	$190,400,000	$1,762,484,599
Transit Capital	$3,182,722,565	$31,180,419	$2,381,528,046	$176,390,728	$5,771,821,758
Transit O&M	$30,894,400	$0	$7,723,600	$0	$38,618,000
	$17,095,553,467	$2,818,685,583	$5,532,831,692	$1,761,289,359	$27,208,360,101

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Planned Projects | Number of Projects by Program Area | Program Areas | Planned Phases | Funds by Program Area | All_Totals_Qu

Projects and Funding by SSTP Objective (Total Allocation Method)

Projects Supporting Access to Jobs	292
Funds Supporting Access to Jobs	$14,386,403,045
Projects Supporting Improved Congestion	342
Funds Supporting Improved Congestion	$14,871,835,109
Projects Supporting Reliable Commutes	152
Funds Supporting Reliable Commutes	$1,762,484,599
Projects Supporting Freight	$2,938,680,712.00
Funds Supporting Freight	115
Projects Supporting Interregional Connectivity	0
Funds Supporting Interregional Connectivity	
Projects Supporting Local Connectivity	0
Funds Supporting Local Connectivity	
Projects Supporting Safety	6
Funds Supporting Safety	$494,976,005.00
Projects Supporting Asset Management	102
Funds Supporting Asset Management	$2,542,490,026
Projects Supporting Optimized Throughput	346
Funds Supporting Optimized Throughput	$8,344,831,551
Projects Supporting Environment	145
Funds Supporting Environment	$1,138,216,342
Projects Supporting No Objective	41
Funds Supporting No Objective	$836,535,272
Total Number of Projects:	1541
Total Funds:	$47,316,452,661

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Results

Once the projects in the database are classified according to the SSTP objectives they support, automated reports are generated that summarize the results. As described in more detail below, the SSTP Progress Report utilizes the "total allocation method" to summarize the number of projects supporting each objective and the "partial allocation method" to summarize the amount of funds supporting each objective. The five hypothetical projects listed in Table B-5 below are used to help illustrate these two methods.

Table B-5 Five hypothetical projects for use in illustrating the total and partial allocation methods

Project	Program Area	Cost
Project 1	Roadway Capital	$20M
Project 2	Freight/Rail/Ports	$3M
Project 3	Transit Capital	$15M
Project 4	Traffic Ops/ITS	$5M
Project 5	Bike/Ped	$7M
TOTAL		$50M

Table B-6 Example of the "total allocation method" used to determine the number of projects supporting each SSTP objective

	Objective										
Project	Improve Access to Jobs	Reduce Traffic Congestion	Improve Efficiency & Reliability of Commutes	Improve Efficiency & Reliability of Freight	Improve Border-To-Border & Interregional Connectivity	Support Local Connectivity to Statewide Network	Reduce Number of Crashes	Optimize Asset Management	Optimize Throughput of People & Goods	Reduce Emissions, Improve Air Quality, Limit Footprint	TOTAL NUMBER OF OBJECTIVES PER PROJECT
Project 1	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	1
Project 2	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐	1
Project 3	☒	☐	☐	☐	☐	☐	☐	☐	☒	☐	2
Project 4	☐	☐	☒	☐	☐	☐	☐	☐	☒	☐	2
Project 5	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	2
TOTAL NUMBER OF PROJECTS PER OBJECTIVE	1	1	1	1	0	0	0	0	3	1	8

Total Allocation Method

Table B-6 illustrates the total allocation method for the five hypothetical projects in Table B-5. Each project is evaluated according to the process outlined in Table B-2 above, and the objective(s) that the project supports receives a check markin the corresponding column(s). The total number of check marks in each column is equivalent to the number of projects supporting each objective. It is called the total allocation method because each project is totally allocated to each objective which it supports. As a consequence, since some projects may support more than one objective, the grand total of the number of projects per objective may exceed the actual total number of projects. In this hypothetical example for instance, the grand total of the projects per objective is eight whereas there are only five projects total. However, it is believed that this apparent discrepancy is fairly easy to explain and understand, and the total allocation method is therefore the most intuitive approach for summarizing the number of projects supporting each objective.

Partial Allocation Method

If the total allocation method were used to allocate the funds spent on projects to the SSTP objectives, it is likely that the grand total of the funds per objective would exceed the actual funds spent. It is believed that this result would be more difficult to understand and therefore a different approach is used. The partial allocation method splits the total cost of a project equally among the objectives it supports. As evident in Table B-7, this method caps the grand total of the funds spent per objective at $50M.

To avoid reporting fractional projects, the total allocation method was used to clearly state the number of projects that, at least in part, support the various objectives. The partial allocation method allowed the costs of projects to be distributed among the various supported objectives while constraining the total cost. Future reports can refine these methods as necessary.

Table B-7 Example of the "partial allocation method" used to determine the funds supporting each SSTP objective

	Objective										
Project	Improve Access to Jobs	Reduce Traffic Congestion	Improve Efficiency & Reliability of Commutes	Improve Efficiency & Reliability of Freight	Improve Border-To-Border & Interregional Connectivity	Support Local Connectivity to Statewide Network	Reduce Number of Crashes	Optimize Asset Management	Optimize Throughput of People & Goods	Reduce Emissions, Improve Air Quality, Limit Footprint	TOTAL $/PROJECT
Project 1	--	$20M	--	--	--	--	--	--	--	--	$20M
Project 2	--	--	--	$3M	--	--	--	--	--	--	$3M
Project 3	$7.5M	--	--	--	--	--	--	--	$7.5M	--	$15M
Project 4	--	--	$2.5M	--	--	--	--	--	$2.5M	--	$5M
Project 5	--	--	--	--	--	--	--	--	$3.5M	$3.5M	$7M
TOTAL $/OBJECTIVE	$7.5M	$20M	$2.5M	$3M	$0	$0	$0	$0	$13.5M	$3.5M	$50M

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